

ETERNUS SF AdvancedCopy Manager 14.2



GUI User's Guide

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Preface

Purpose of the User's Guide

The AdvancedCopy Manager GUI User's Guide provides detailed information relating to the configuration and operation of Fujitsu's ETERNUS SF AdvancedCopy Manager (hereafter abbreviated to AdvancedCopy Manager) using the AdvancedCopy Manager GUI Client.

The information contained in this GUI User's Guide is generally complete, but where the product is used in conjunction other products, it is highly recommended that both this manual and the reference sources provided should be consulted prior to or in conjunction with relevant product manuals to ensure a reliable operation.

Organization of this Manual

The AdvancedCopy Manager GUI User's Guide is organized as follows:

[Chapter 1 Workbench](#)

This information describes the elements of the AdvancedCopy Manager Workbench environment and guides the user through how to invoke AdvancedCopy Manager functionality using the GUI Client.

[Chapter 2 Maintenance and Configuration](#)

This information describes how to perform replication using the AdvancedCopy Manager GUI Client.

[Chapter 3 Backup](#)

This information describes how to perform backup and restore using the AdvancedCopy Manager GUI Client.

[Chapter 4 Replication](#)

This information describes how to perform replication using the AdvancedCopy Manager GUI Client.

Audience

The intended audience for this document are users who are responsible for configuring or using AdvancedCopy Manager GUI Client in a Windows or UNIX environment and who have effective knowledge and experience in the topics outlined in the section entitled Prior Knowledge Assumptions.

Prior Knowledge Assumptions

These manuals have been prepared on the assumption that the reader will have access to the full suite of AdvancedCopy Manager operations manuals and a functional understanding of at least some of the topics described below, as may be applied in a Windows environment.

The requirement of such prior expertise may depend on the specific nature and vendor mix of the environment into which the AdvancedCopy Manager is installed.

- Fujitsu's ETERNUS SF Storage Systems
- Operational understanding of backup and replication
- Generic hardware copy modes such as snapshot, differential and incremental
- Management of a Windows or UNIX environment
- Disk management and configuration.

Diagrams and Screenshots

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Indicative screen displays are displayed in text boxes with a colored background when viewed online.

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Related Manuals

The following additional AdvancedCopy Manager documentation should be used in conjunction with the AdvancedCopy Manager GUI User's Guide:

- ETERNUS SF AdvancedCopy Manager Overview
Provides an overview of ETERNUS SF AdvancedCopy Manager.
- ETERNUS SF AdvancedCopy Manager Installation and Setup Guide
Describes the installation procedure for ETERNUS SF AdvancedCopy Manager.
- ETERNUS SF AdvancedCopy Manager Operator's Guide
Describes the operating procedures for ETERNUS SF AdvancedCopy Manager.
A different operator's guide is provided for each supported operating system.
- ETERNUS SF AdvancedCopy Manager GUI User's Guide
Describes the operating procedures for the GUI Client of ETERNUS SF AdvancedCopy Manager.
- ETERNUS SF AdvancedCopy Manager Message Guide
Explains the messages output by ETERNUS SF AdvancedCopy Manager and the associated troubleshooting.
- ETERNUS SF AdvancedCopy Manager Operator's Guide for Cluster Environment
Describes the installation and customization procedures for ETERNUS SF AdvancedCopy Manager in a cluster environment.
- ETERNUS SF AdvancedCopy Manager Operator's Guide for Tape Server Option
Describes the operating procedures for tape backup with ETERNUS SF AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager Operator's Guide for Copy Control Module

Describes the operating procedures for the Copy Control Module with ETERNUS SF AdvancedCopy Manager.

- ETERNUS SF AdvancedCopy Manager Glossary

Describes the terminology used in the ETERNUS SF AdvancedCopy Manager manual.

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Chapter 1 Workbench

The AdvancedCopy Manager GUI Client is a rich client application that is invoked on a user's local computer and is operated much like any other Windows application. When started, it connects to the AdvancedCopy Manager's Storage Management Server and allows users to monitor and manage the AdvancedCopy Manager environment.

The AdvancedCopy Manager GUI Client includes a collection of tabbed panes called Views, collectively referred to as the AdvancedCopy Manager Workbench perspective. The primary views include the Site view which presents to the user a layered view of the entire AdvancedCopy Manager site structure in a single pane, and a Details view which presents a more granular perspective of information relating to these elements.

Views offer a consistent and highly configurable way of navigating and interfacing with the AdvancedCopy Manager application. Some views can also be detached, and then repositioned elsewhere on the screen. Each view has a toolbar and drop-down menu offering functions that apply specifically to the view's contents. The AdvancedCopy Manager Workbench perspective can be modified to include or exclude specific views. The default perspective can be reinstated at any time using the [Reset Perspective] option in the [Window] pull-down menu.

The searchable online help can be initiated from the application and it provides instructions on how to perform tasks using the AdvancedCopy Manager GUI Client.

1.1 Supported Environment

The supported environment for the AdvancedCopy Manager GUI Client is as follows:

Supported OS	Remarks
Windows(R) 7 Home Basic (32-bit) Windows(R) 7 Home Premium (32-bit) Windows(R) 7 Professional (32-bit) Windows(R) 7 Enterprise (32-bit) Windows(R) 7 Ultimate (32-bit)	
Windows Vista(R) Home Basic (32-bit) Windows Vista(R) Home Premium (32-bit) Windows Vista(R) Business (32-bit) Windows Vista(R) Ultimate (32-bit) Windows Vista(R) Enterprise (32-bit)	includes SP1, SP2
Windows(R) XP Home Edition Windows(R) XP Professional	includes SP1, SP2, SP3
Windows Server(R) 2003, Standard Edition SP1 Windows Server(R) 2003, Standard Edition SP2 Windows Server(R) 2003, Enterprise Edition SP1 Windows Server(R) 2003, Enterprise Edition SP2 Windows Server(R) 2003 R2, Standard Edition Windows Server(R) 2003 R2, Standard Edition SP2 Windows Server(R) 2003 R2, Enterprise Edition Windows Server(R) 2003 R2, Enterprise Edition SP2 Windows Server(R) 2008 Standard (32-bit)(64-bit) Windows Server(R) 2008 Standard SP2 (32-bit)(64-bit) Windows Server(R) 2008 Enterprise (32-bit)(64-bit) Windows Server(R) 2008 Enterprise SP2 (32-bit)(64-bit) Windows Server(R) 2008 Datacenter (32-bit)(64-bit) Windows Server(R) 2008 Datacenter SP2 (32-bit)(64-bit) Windows Server(R) 2008 R2 Standard Windows Server(R) 2008 R2 Standard SP1 Windows Server(R) 2008 R2 Enterprise Windows Server(R) 2008 R2 Enterprise SP1	

Supported OS	Remarks
Windows Server(R) 2008 R2 Datacenter Windows Server(R) 2008 R2 Datacenter SP1	

Solaris, Linux, HP-UX and AIX are unsupported.

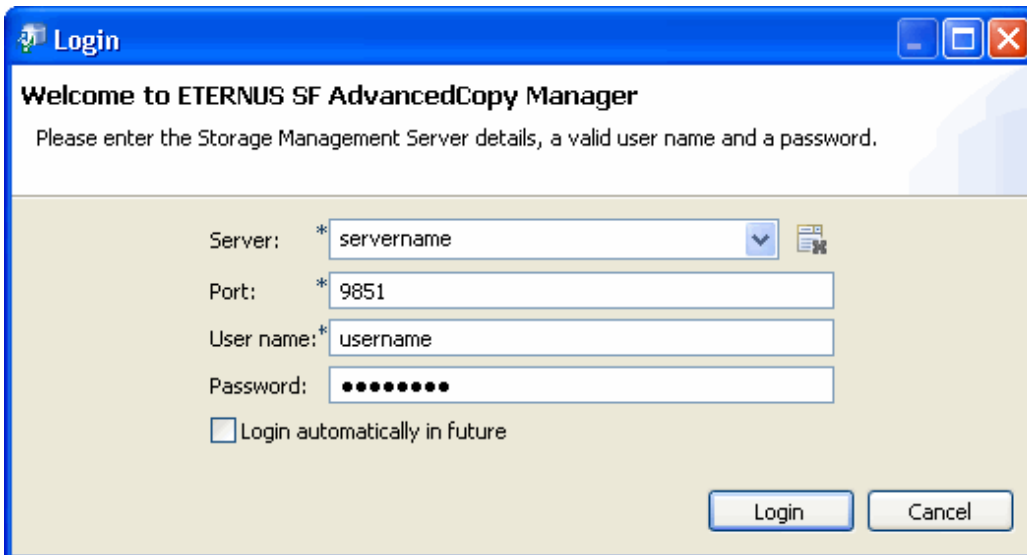
Note

The features supported in AdvancedCopy Manager differ depending on the version. Using the replication features by the GUI Client is only available when version 13.1 or above is installed on the Storage Server. Use the CLI to operate replication if your Storage Server is 13.0 or below.

1.2 Starting the AdvancedCopy Manager GUI Client

To start the AdvancedCopy Manager GUI Client, from the Windows [Start] menu, select [All programs] > [AdvancedCopy Manager] > [GUI Client]. The [Login] dialog box is displayed and prompts the user for the following details:

- Storage Management Server host name or IP address
- Port Number
- A valid User name and password



1. Specify a Storage Management Server host name or IP address or select a Storage Management Server host name or IP address from the server dropdown combo box.
2. Enter the Port number used to connect to the Storage Management Server.
3. Enter a valid AdvancedCopy Manager user name and password.
4. Use the UNIX root or Windows startup account if no AdvancedCopy Manager user name has been registered.
5. Click [Login] to start the GUI Client.

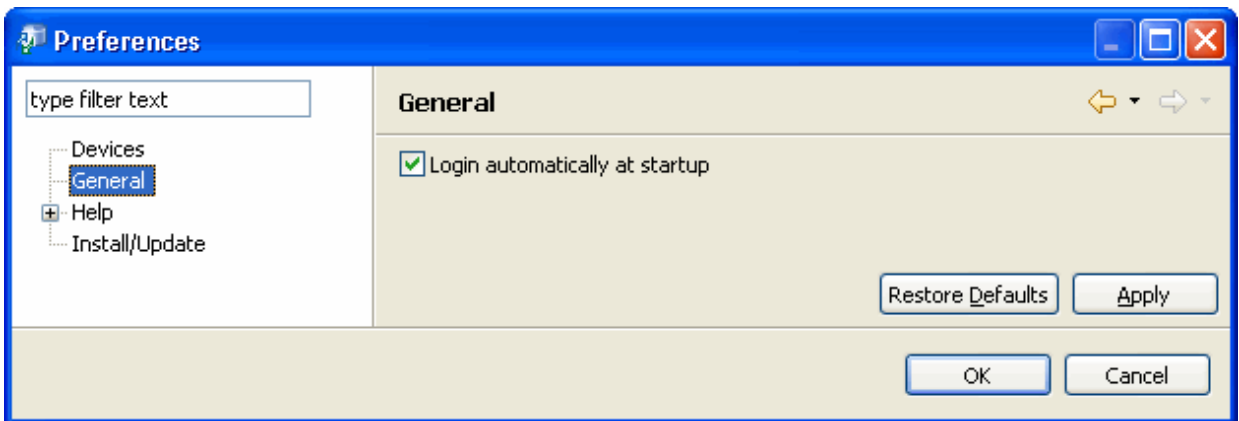
The user's login details (Server, Port, User name) as specified in the [Login] dialog box can be saved by enabling the [Login automatically in future] option. The system will then log in automatically using the saved details on subsequent attempts.

If you have more than one Storage Management Server, the login details are saved for each Storage Management Server.

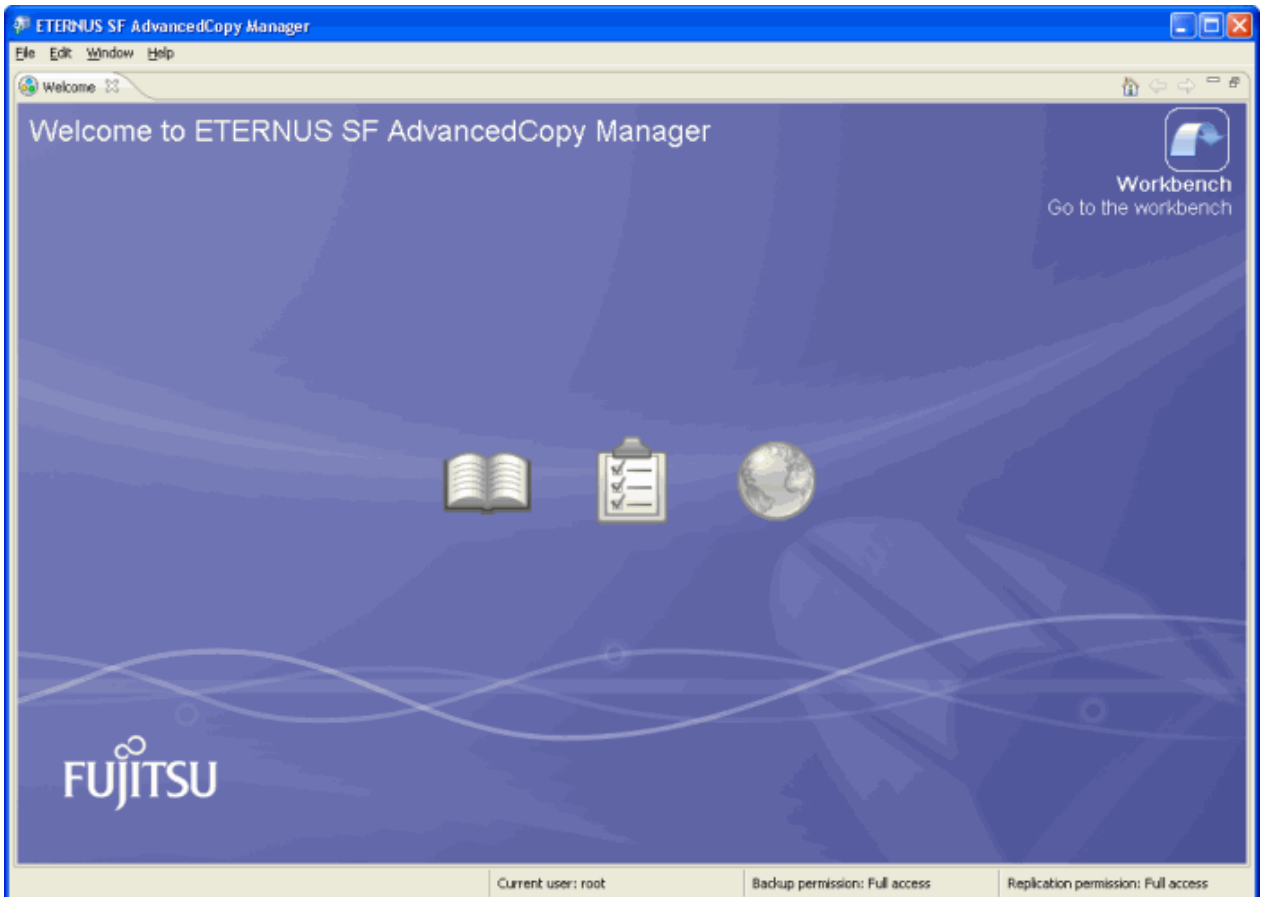
The [Login automatically at startup] option can be disabled as follows:

1. Open the [Window] pull-down menu on the main menu bar and select [Preferences] to open the [Preferences] dialog box.

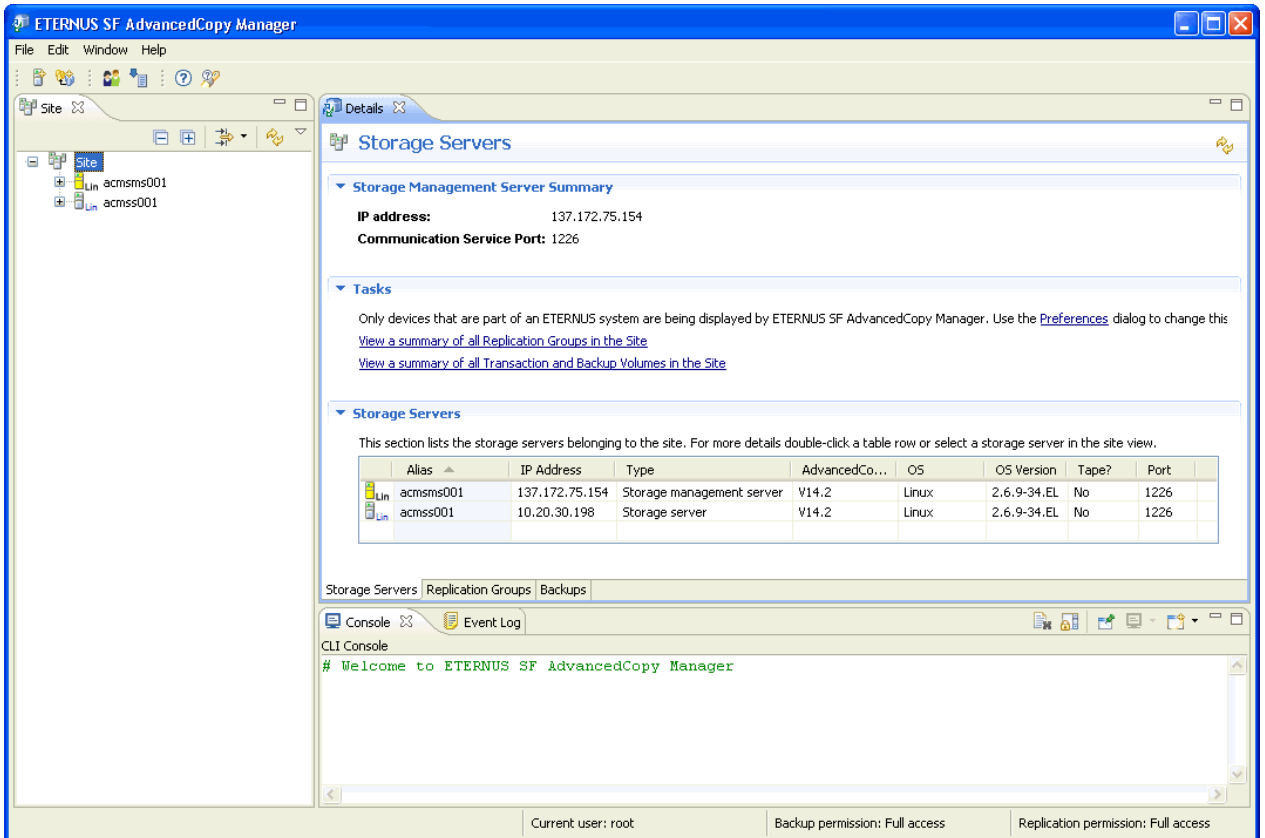
2. Select [General] to reveal the [Login automatically at startup] check box and disable it.



The Welcome topic is displayed once the user is authenticated. Click an icon on the "Welcome" topic to refer to information you wish to view. Click the Workbench icon on the top right side of the window to proceed to use AdvancedCopy Manager.

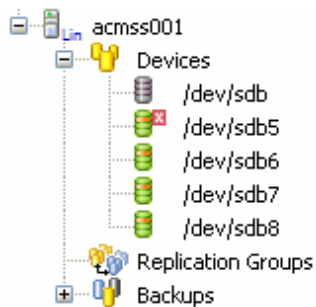


The main application perspective is displayed.



3. Select the Site icon in the Navigation tab and click the symbol to view all registered Storage Servers at the site.
4. Select any Storage Server icon and click the symbol again to view all groups and elements associated with that Storage Server.
5. Progressively click a sub-node (Devices, Replication Groups, Backups) and click the symbol to reveal all subordinate elements associated with each one.

Device error or unknown devices detected upon opening the view will be denoted by the symbol located in the top right corner of the device icon.

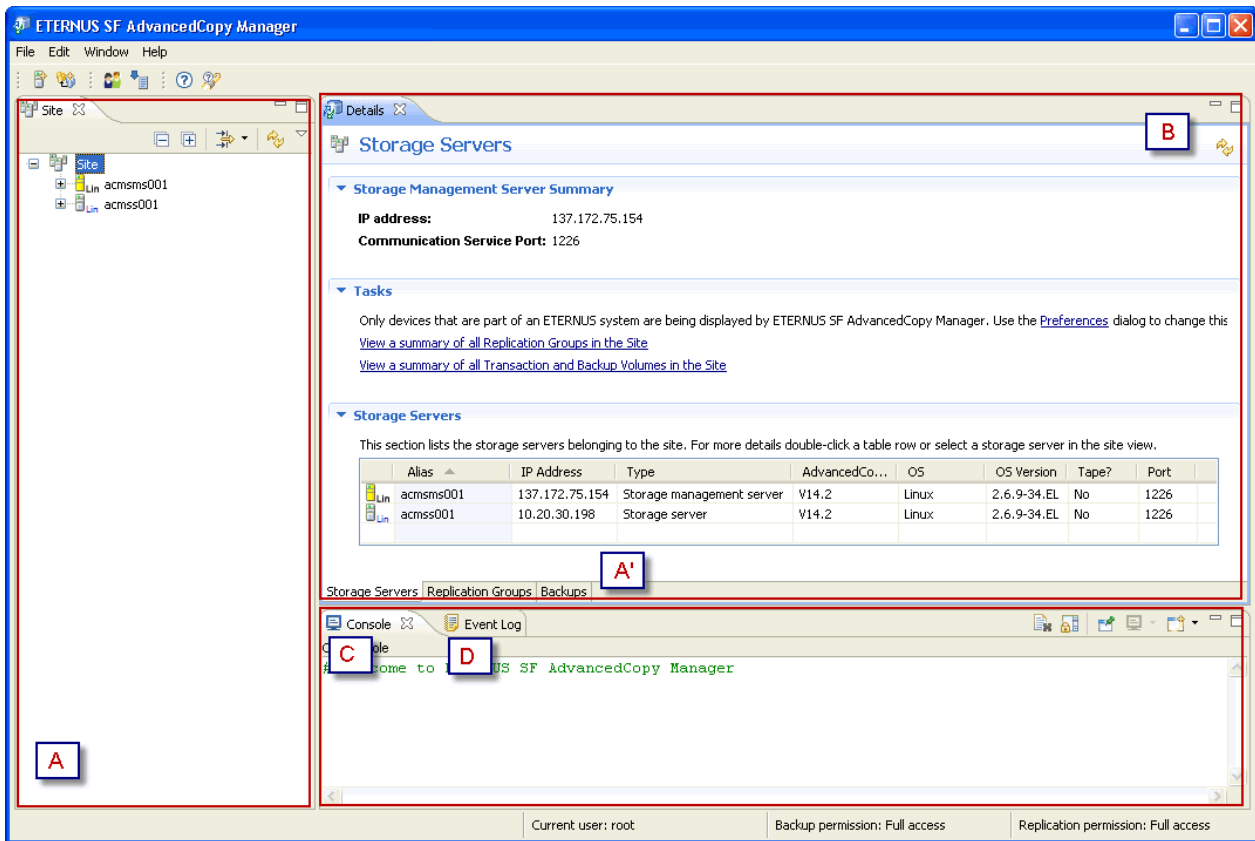


1.3 Navigating the AdvancedCopy Manager GUI Client

1.3.1 Workbench Elements

1.3.1.1 Views


The main application perspective consists of the following views.











A: Site View

The AdvancedCopy Manager GUI Client Site view displays all of the registered elements of the current AdvancedCopy Manager environment (Site) in a tree view. These elements include servers, devices, replication groups and backups.







Drilling down in the relevant object tree displayed in the Navigation tab displays subordinate objects with the object's properties displayed in the Details view to the right of the Navigation tab.

A Filter can be invoked by clicking the Filter Icon  to limit the view to only those objects of a specified type or group, and to retrieve an object for display which matches either an explicitly specified criteria or a pattern using standard wildcard characters such " * ", " ? ".

The Storage Management Server is shown as a yellow server icon and the Storage Server is shown as a gray server icon. The server icons include the abbreviated operating system name as well. A Storage Management Server or Storage Server is identified by either host name or a user-defined Storage Server alias, if defined.

Icon	Description
	Storage Management Server (Windows)
	Storage Server (Windows)
	Storage Management Server (Solaris)
	Storage Server (Solaris)
	Storage Management Server (Linux)
	Storage Server (Linux)
	Storage Server (HP-UX)
	Storage Server (AIX)

The devices under the Devices node in each Storage Server are being managed by the AdvancedCopy Manager. The different device types are denoted by a unique device icon in accordance with the classification below:

Icon	Description
	Disk
	Partition (Slice or LUN)
	SDX Object which is managed by PRIMECLUSTER GDS
	VxVM Volume managed by VERITAS Volume Manager
	LVM Volume managed by Logical Volume Manager
	Unknown device

Clicking on the Site view top level icon will display a tab at the bottom of the Details view for each major resource group such as Storage Servers, Replication Groups and backup groups. (A' in the figure) Click on either of these group tabs to view relevant information for all like groups across the entire site.

B: Details View

The Details view is by default located to the right of the Site view and displays more detailed information in either summary or tabulated form, depending on the object's position in the site tree.

The Details view incorporates a Tasks pane inside the view which lists a range of links to invoke tasks related to the selected object.



If the object displayed in the summary view has any child objects such as groups or devices, clicking on any one of these in the Site view will display more detailed information in one or more sections in the Details view called Forms. This information is typically in tabulated form.

An icon in the top left hand corner of the form will expand or collapse the form as required.

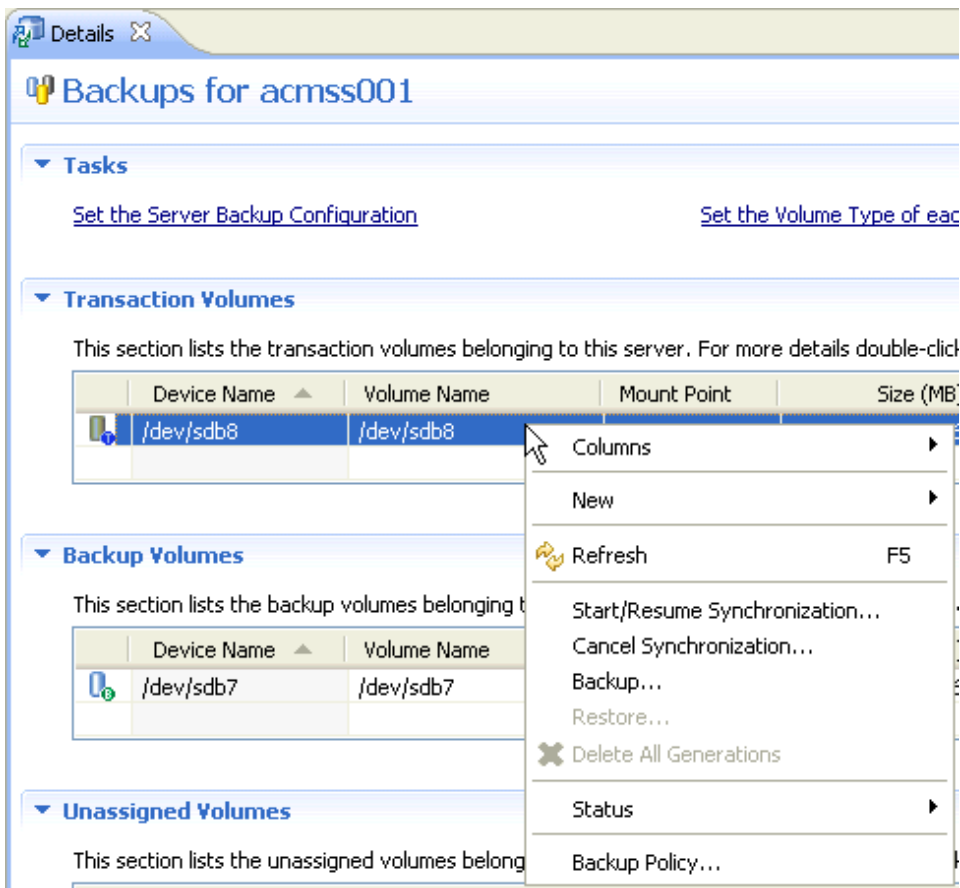
Double-clicking an item in any form will change the selection in the Site view to that child object and refresh the Details view with summary information relating to that object.

The form will be titled in accordance with the group to which they belong or the defined role of the object.

The columns in the tabulated form can be reordered by dragging and dropping the heading to the right or left as required.

Click the  or  icon located in the left of each form to expand or close the form.

Right-clicking sections of the view or on an item in the form will invoke the relevant context menu.



A Task pane is incorporated in the Details view and presents hyperlinked shortcuts to perform configuration or operational tasks related to the current object.

C: Console View

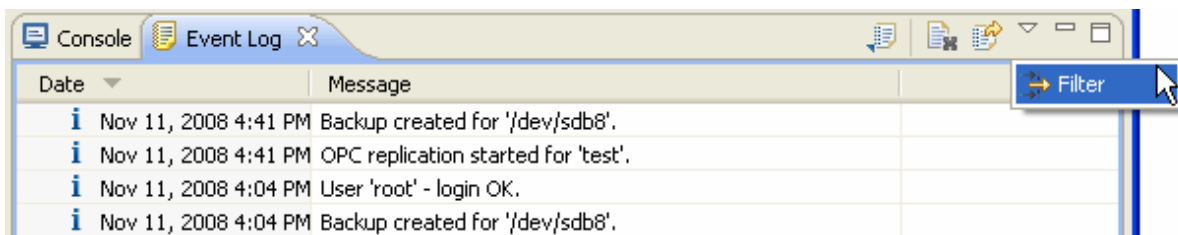
The Console view displays the equivalent CLI commands of any action performed from within the AdvancedCopy Manager GUI Client, and any success/failure messages returned from the Storage Management Server.

Output is appended to the end of the console so that a history of issued commands for the current session is retained. The console text can be copied or exported as a text file for use in your own scripts. Please note that task history is not retained between GUI Client sessions.

D: Event Log View

The Event Log will chronicle and timestamp any success, confirmation or failure messages returned from the Storage Management Server. This detail can be exported, saved or restored as required.

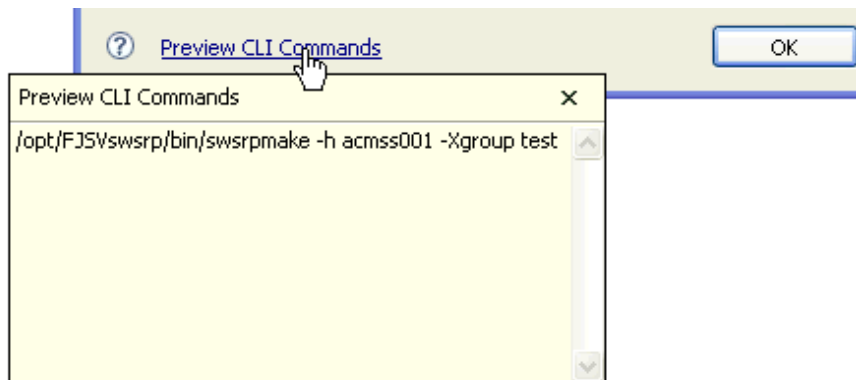
Information chronicled in the Event Log can be grouped or filtered to reduce the difficulty of searching for a specific instance or event in a log which may have many entries.



To provide more workbench space, the CLI Console and the Event Log may be detached and viewed in a separate window. To restore the separated Console or Event Log to the main perspective, use the [Show View] option in the [Window] menu on the Main Application Toolbar or click [Reset Perspective].

1.3.1.2 CLI Preview

Click the [Preview CLI Commands] link in the bottom right hand corner of the dialog box to preview the Command Line Interface syntax for the dialog box task with all options selected.



1.3.1.3 Status Bar

The status bar is located at the bottom of the GUI Client and typically shows the current AdvancedCopy Manager element or range of elements selected, the name of the current user and some shortcut icons for the welcome topics.

1.3.1.4 Toolbars

Main Application Toolbar

The main application toolbar contains the following toolbars in accordance with the [File] menu:

- New Server : Configure a new Storage Server.
- New Replication Group : Configure a new Replication Group.
- User Accounts : Manage User accounts and permissions.
- Download Logs : Download log files for troubleshooting.
- Help Contents : Invokes the Help in a separate window.
- Search Help : Invokes a searchable help pane.



View Toolbars

Standard functionality such as Minimize, Maximize, and Close are provided for all views in the view toolbar at the top of each view. For example, the Site view has icons to Expand All, Collapse All, Filter Items in the Tree and Refresh the Site tree.



The Menu icon (a small inverted triangle) contains additional menu items that control the display and configuration of the view contents.

1.3.1.5 Menus

An array of standard high level pulldown menus for AdvancedCopy Manager tasks are available on the main application menu bar.

Only those options that are allowable for the selected object and in accordance with the current user's permissions level will be available, with invalid options grayed out. Some options also support selection of multiple elements if not already grouped.

Menus or specific menu items can be disabled according to a user's permissions profile.

1.3.1.6 Help

Context Help

All dialog boxes and wizards support context help which is denoted by the icon shown below.



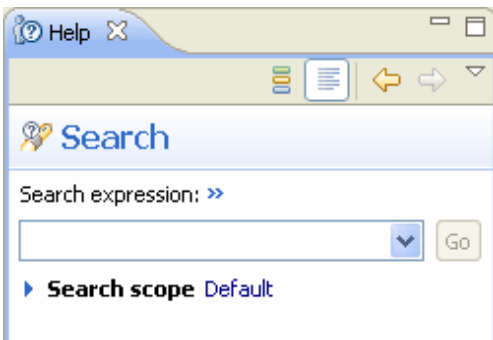
Click the [Help] icon in the bottom left of the dialog box to access supplementary information related to the task being attempted. In the error message dialog box with an error code, clicking the [Help] icon shows the section in the Message Guide that corresponds with the error code.

Alternatively, a fully indexed and searchable Help can be accessed through either the main application [Help] pull-down menu or one of the [Help Contents] icons on the main application toolbar (see inset) as illustrated below.



The AdvancedCopy Manager GUI Client Help allows the user to browse topics in the Contents frame in the left pane and to click on a topic in order to display its contents. Use the navigation arrows (the [Back] and [Forward] buttons) to navigate within the history of viewed topics.

A Search function is provided to quickly locate topics on a particular subject in the documentation. Enter a query topic in the search field and use the Search frame in the right hand pane to display the Search view. The user can narrow the scope of the search by selecting only the sections of interest.



Chapter 2 Maintenance and Configuration

This chapter provides details on managing the following maintenance and configuration components of AdvancedCopy Manager:

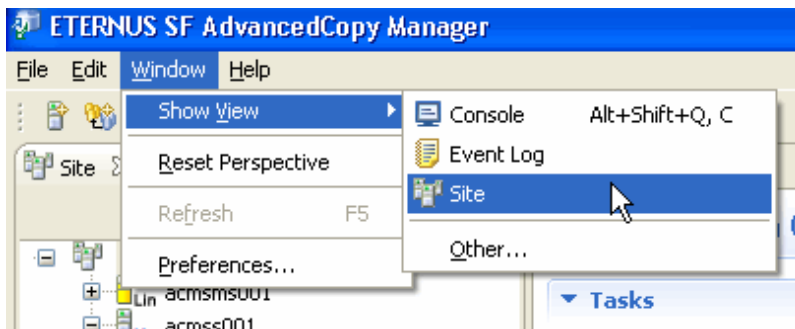
- Managing Servers
- Managing Devices
- Managing the Network
- Managing Usernames and Passwords


2.1 Manage Servers


2.1.1 View Site Information

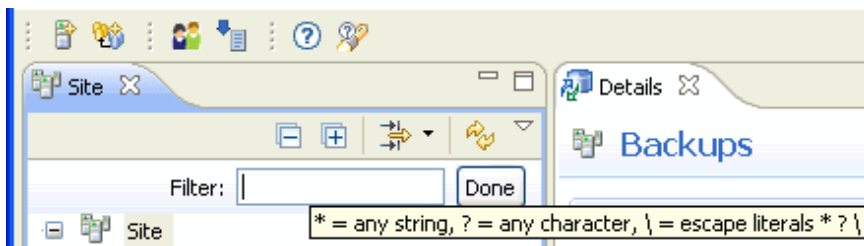
The Site structure can be displayed in a single tree view using the [Show View] option under the [Window] item on the main menu bar.


1. Select [Window] on the main menu bar and select [Show View].
2. Select [Site] in the submenu to change the focus to the Site view in the Navigation tab.



The [Filter] icon  on the Site view toolbar may be used to selectively view a specific AdvancedCopy Manager element or a range of elements.

3. Click the [Filter] icon  on the Site view toolbar to invoke the filter text box.
4. Specify all or part of the relevant name to progressively display those elements matching the filter criteria. Wildcard characters may also be used in the filter string.



5. To restore the full Site view, clear the Filter text box by clicking the [Clear] icon .
6. Click [Done] to refresh the Site view when the required element has been located.

2.1.2 View Storage Management Server Information

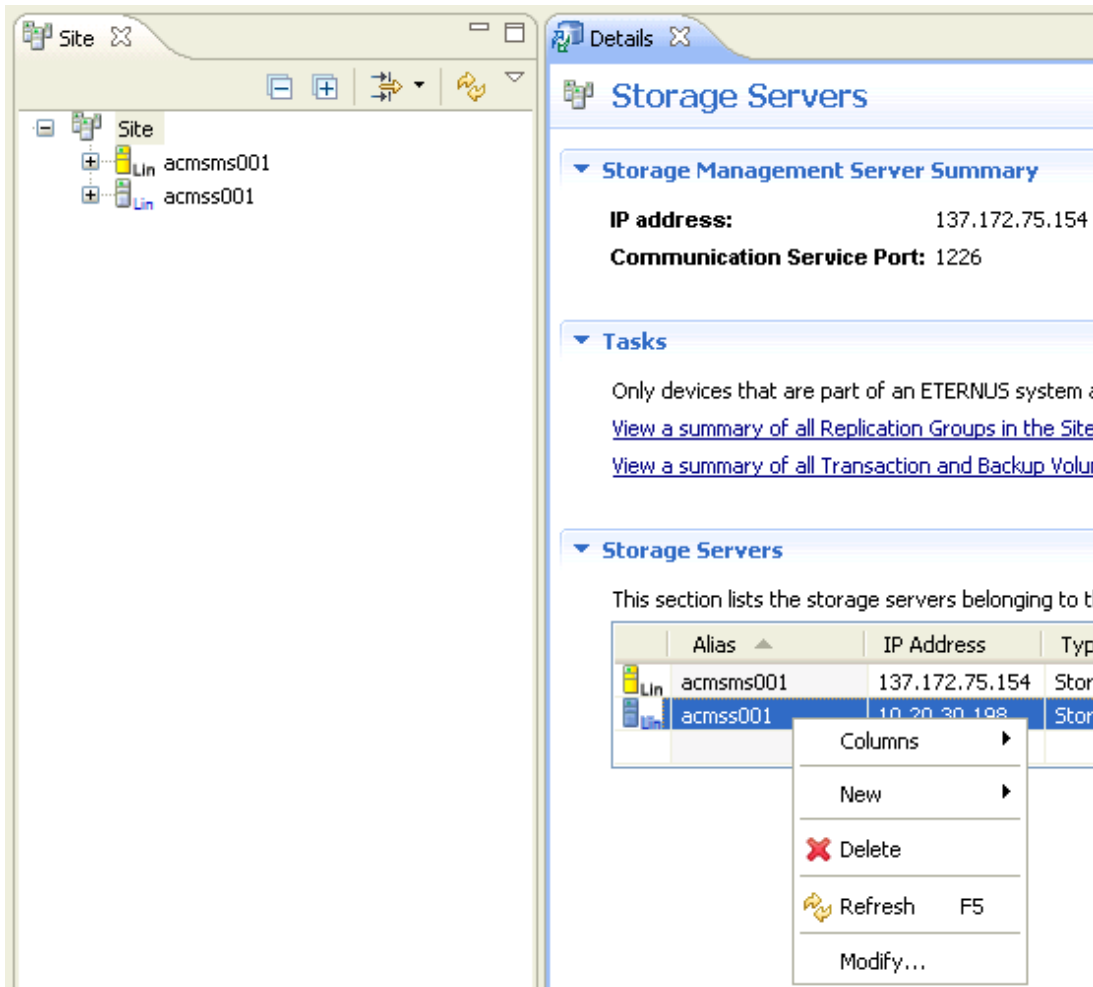
Click the Site icon to view summary details of a site.

A form is displayed in the Details view with summary of the site.

This will include host Storage Management Server information such as name, IP address and the port number. The port number is used for the Storage Management Server to communicate with all subordinate Storage Servers.

Storage Servers managed within the site will be detailed in a list array within the form.

Right-click on any of the subordinate objects in the list array to invoke a context menu.



2.1.3 Add and Delete a Storage Server

2.1.3.1 Add a New Storage Server

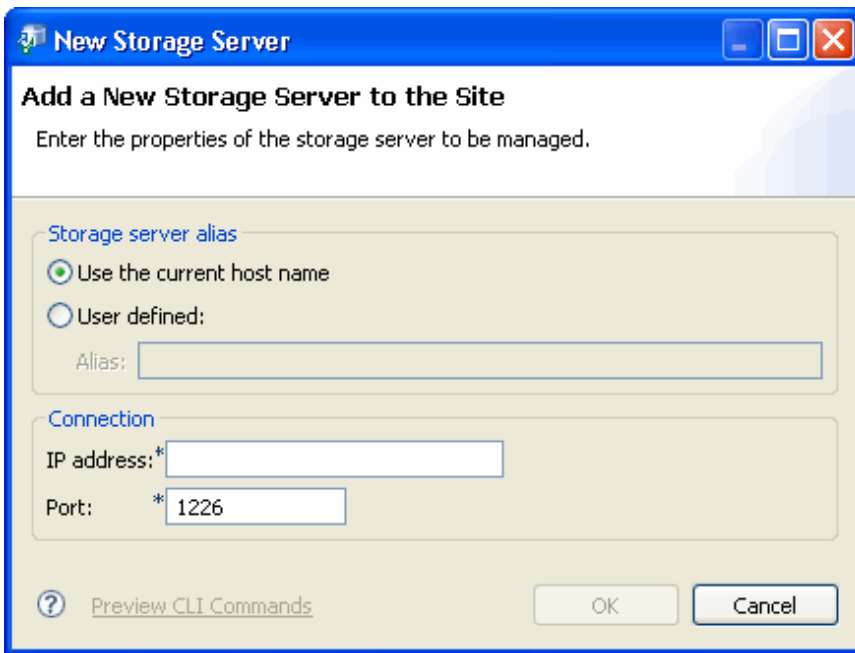
Add a new Storage Server to be managed under the Storage Management Server. When the Storage Management Server performs the role of both Storage Management Server and Storage Server, Storage Server registration is not required.

To add a new Storage Server, perform the following steps:

1. Right-click anywhere in the Site view to invoke the context menu.
2. Select the [New] > [Storage Server] options to invoke the [New Storage Server] dialog box.



The [Add a New Storage Server to the Site] dialog box is displayed.



3. Check the [Storage server alias] option as appropriate.

The new Storage Server will take the current host name unless the option to define a host name is selected, in which case the alias becomes a mandatory field. The alias must be not greater than 255 bytes and must be unique within the site.

Should the server name change in the future, this alias need not change.

4. Specify an IP address and a port number for the new Storage Server.

The IP address must be unique and also the port number, which is used to communicate with the Storage management Server.

5. Check that the information provided is correct, then click [OK].

Note

In a cluster configuration, enter the logical IP address of the Storage Server as the IP address. Specify the port number registered when the cluster was set up for the Storage Server.

2.1.3.2 Delete the Registration of a Storage Server

Delete a Storage Server as follows.

1. Perform the following steps before deleting the Storage Server:

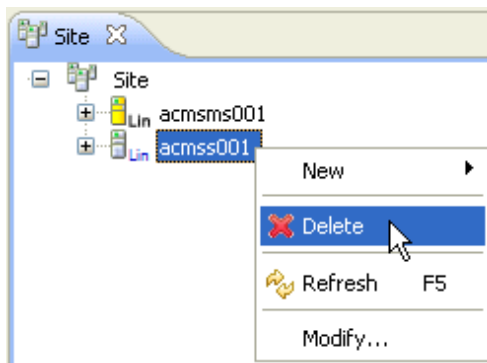
- a. In case the backup is being used:

- Delete all backup generations.
- Delete backup policies associated with the volumes.
- Remove transaction and backup volumes.
- Delete tape backup management class.

- b. In case the replication is being used:

- Delete Replication Pairs.
- Delete Replication Groups.

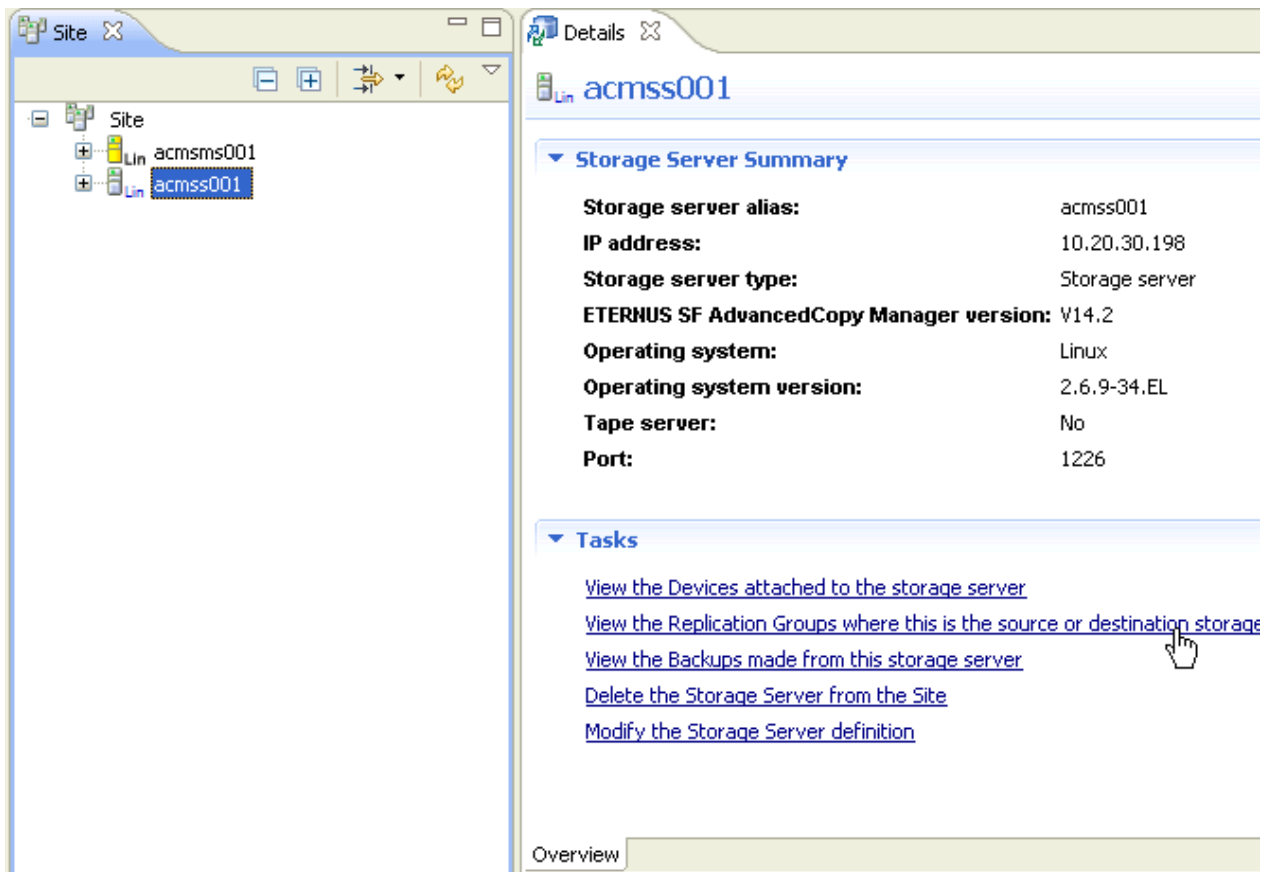
2. In the Site view, right-click on the Storage Server icon to be deleted, and select [Delete].



3. The [Confirm Delete Storage Server] dialog box is displayed.
Click [Yes] to delete the Storage Server.

2.1.4 View Storage Server Information

Select a Storage Server from the Site view to show the summary of the server in the Details view.



2.2 Manage Devices

2.2.1 View Storage Server Device Information

The following steps describe how to refresh the information related to a device on the Storage Server.

Refresh information for Devices on a Server

- Perform the following to refresh information for all devices on a server.

Right click on the [Devices], and select the [Refresh].

A form is displayed in the Details view with all devices associated with the selected device node in a list array. Not all devices displayed will necessarily be configured for use with AdvancedCopy Manager.



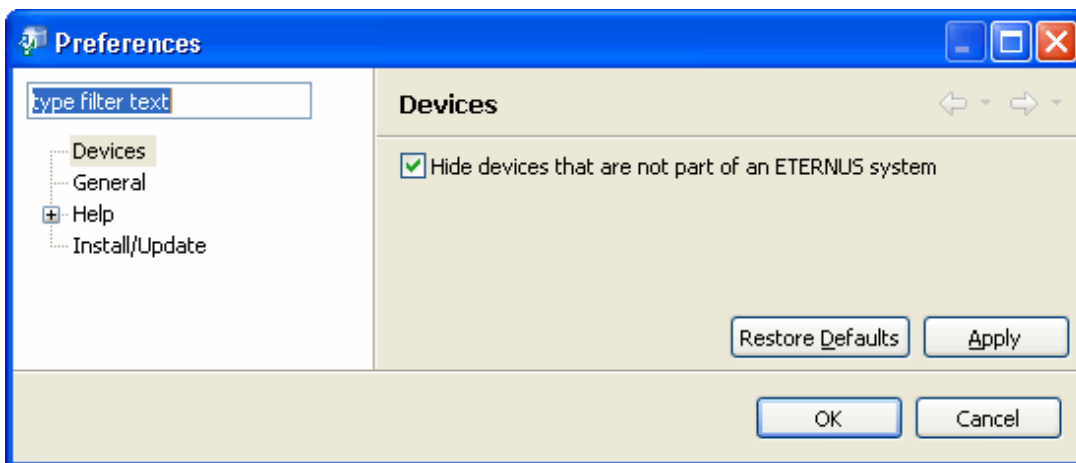
- Alternatively, perform the following to refresh selected devices only.
 1. Select one or more devices from the Site view or the Details view.
 2. Right-click on the selected devices, and then click [Refresh].

2.2.2 Hide non-ETERNUS Devices

The AdvancedCopy Manager GUI Client allows the user to hide the devices that are not part of an ETERNUS system. This feature is enabled from a global perspective across the entire AdvancedCopy Manager GUI Client.

To hide or show these non-ETERNUS devices, select the [Preferences] option from the [Window] option on the main menu bar.

In the [Preferences] dialog box, check or uncheck the [Hide devices that are not part of an ETERNUS system] check box as appropriate.

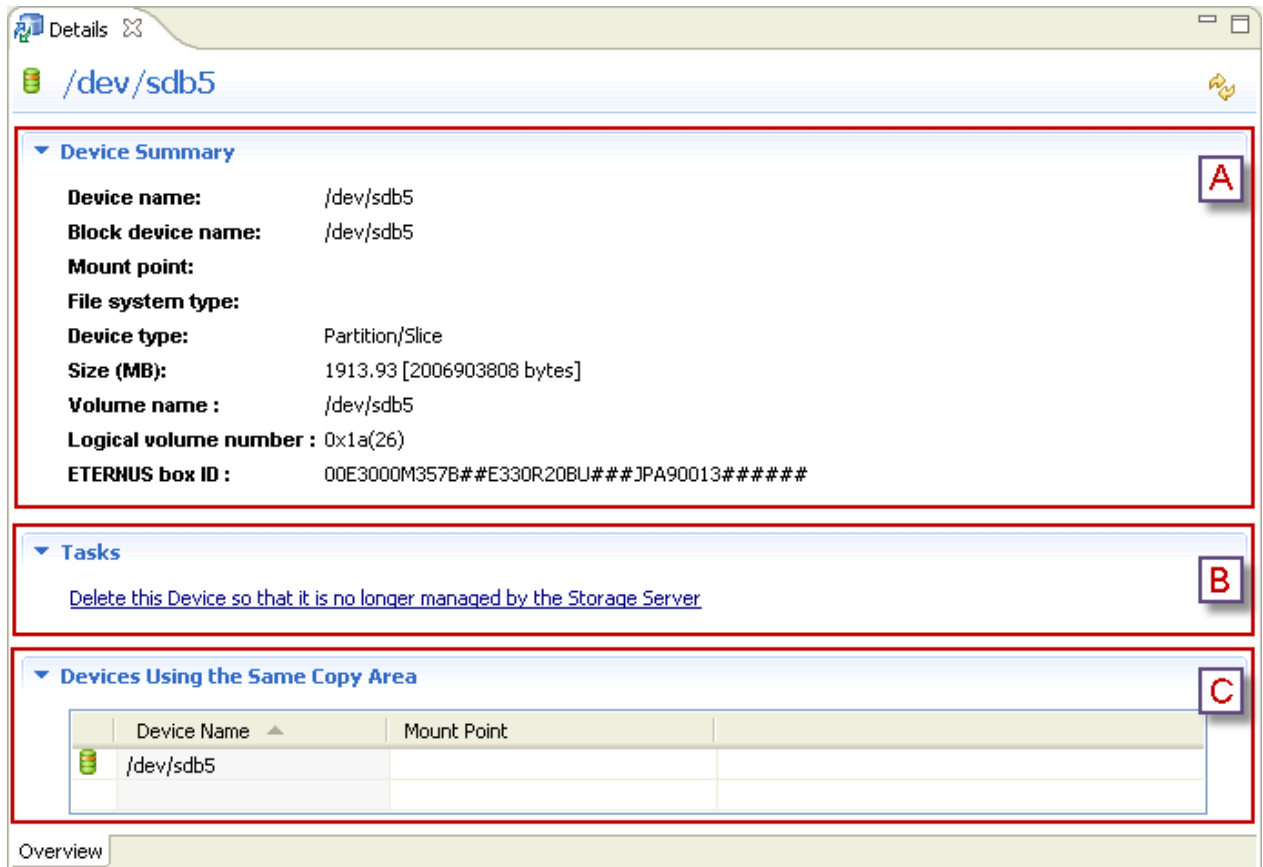


2.2.3 View Devices Using the Same Copy Area

Select a Device tree object to refresh the Details view with information relating to the selected device.

- A : The first part of the view is titled Device Summary, and displays general information about the device.
- B : If the device is in an error state, then the state icon and a description will be displayed after the first section of the view.

- C : Additional forms may be displayed in the same view, listing information about any devices which share the same copy area or are in the same logical group. All devices in the table, including the selected one, will be copied by AdvancedCopy Manager, regardless of which device is configured as a source in copy operation.



Double-click a device in the table to refresh the [Details] view with its information.

2.2.4 Add and Delete a Device

2.2.4.1 Add a New Device

A device attached to a Storage Server must be added before you can use it with AdvancedCopy Manager.

Operation type and role also need to be set depending upon whether it is to be used for backup or replication.

A backup policy will need to be associated with the volume if it is to be used in backup operations.

For details, refer to "3.4.1 Set Backup Policy".

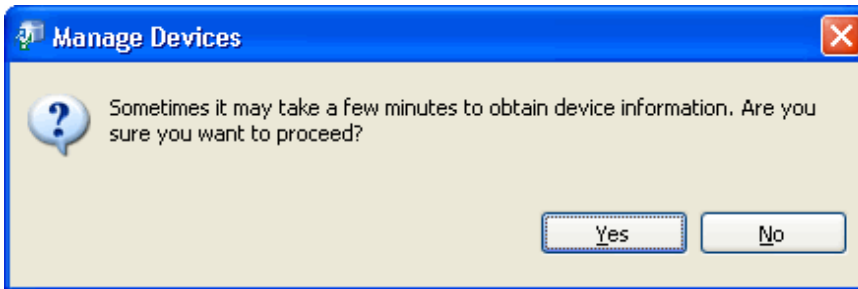
If this device is to be used in replication, the volume will need to be associated with a Replication Group or Volume Pair. For details on how to configure the replication, refer to "4.1.2 Create a Replication Group".

Perform the following steps to add a hosted device to the AdvancedCopy Manager:

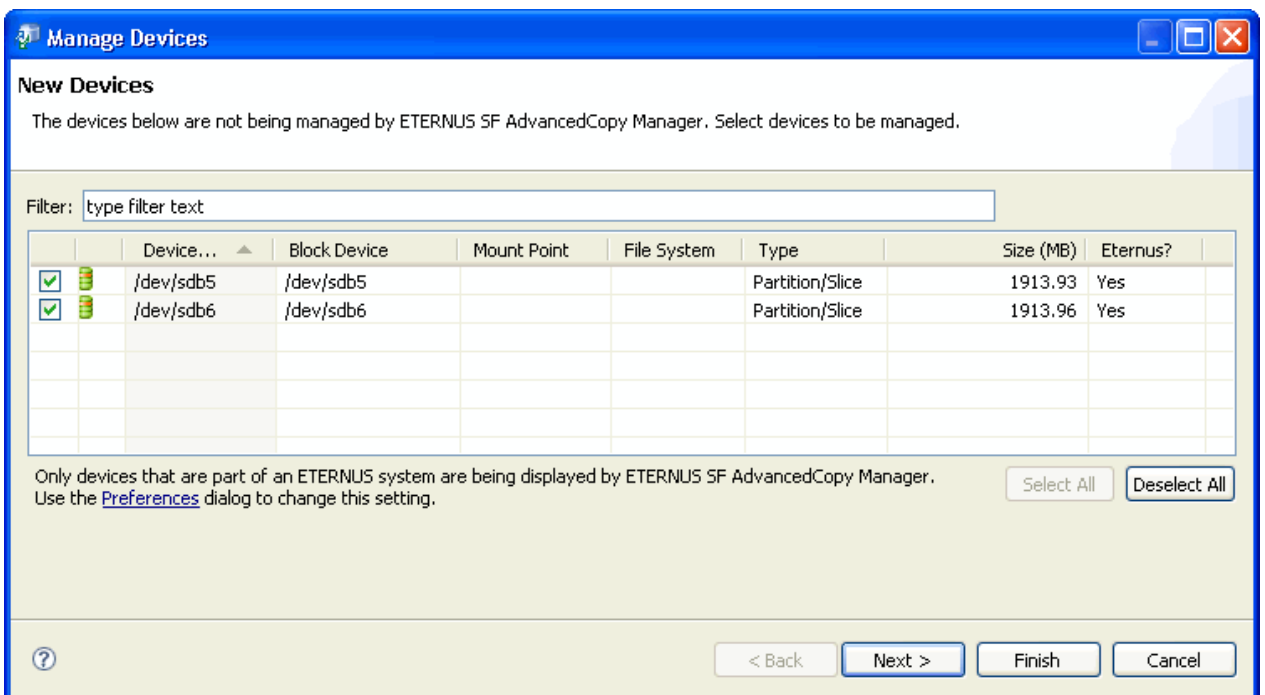
1. Right-click a [Devices] node belonging to a Storage Server to invoke the context menu, and then select the [Manage Devices] option.

2. Since querying the Storage Server for device information could take several minutes, the [Manage Devices] confirmation dialog box below is displayed. Click [Yes] to proceed.

Once the query to the server is completed, the [Manage Devices] wizard is displayed.



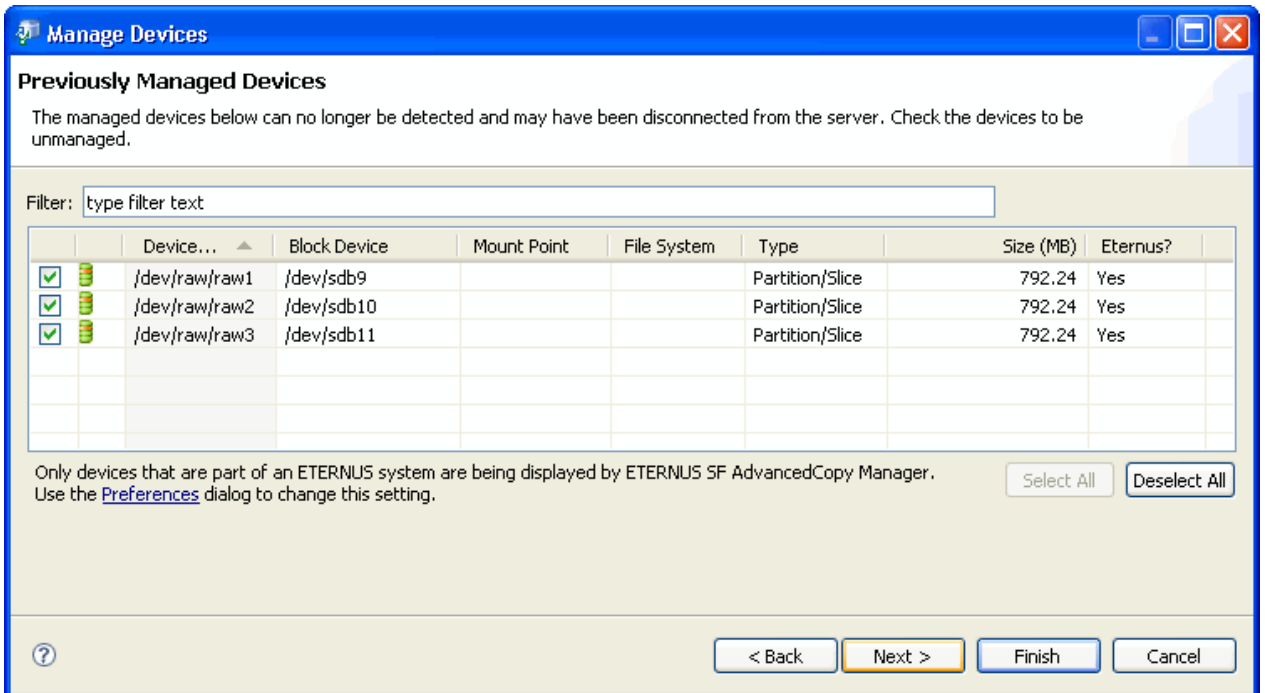
3. The [New Devices] wizard page displays the new devices that are not currently managed by the AdvancedCopy Manager. Select the required devices and click [Next].



If there are many devices displayed, enter the part of the device name to display only the required devices.

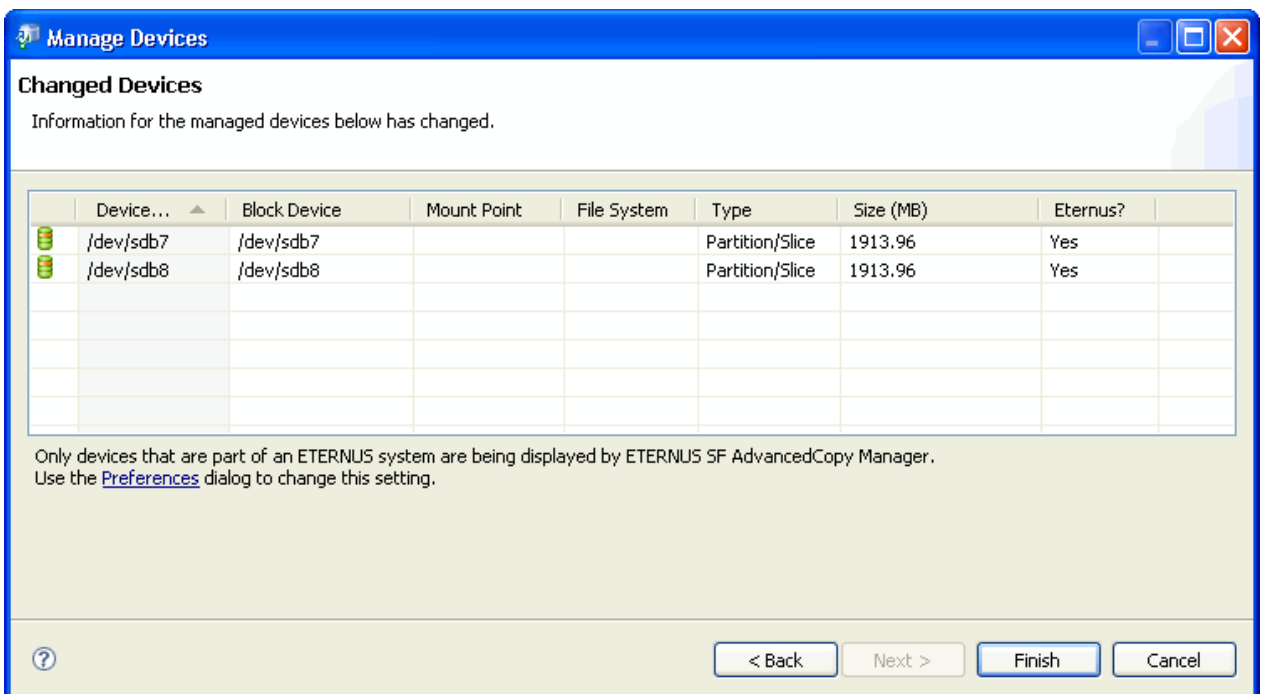
- The [Previously Managed Devices] wizard page displays the devices which have been managed by the AdvancedCopy Manager, but no longer exist in the Storage Server.

Select the devices to remove from the AdvancedCopy Manager and click [Next].



- The [Changed Devices] wizard page displays the devices that have been changed - no devices are displayed if the configurations of devices has not changed.

Click [Finish] to complete the wizard.



Point

Depending on the type of operating system or ETERNUS, attempting to manage new devices in AdvancedCopy Manager may require the user to confirm that processing should proceed for some ETERNUS devices. In this case, an information dialog box with the device detail is displayed before the wizard is closed

2.2.4.2 Delete a Device

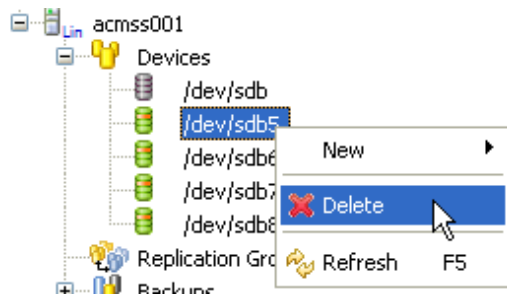
This section describes how to remove a managed device from a Storage Server.

Before the device can be removed from AdvancedCopy Manager registration, it must no longer be registered for backup, or associated with any backup policy or a member of any Volume Pair or Replication Group. For details, refer to "[3.3.2 Remove a Transaction Volume](#)", "[3.3.3 Remove a Backup Volume](#)" and "[4.1.4 Delete a Replication Group](#)".

1. Select one or more devices from the Devices node in the Site view and right-click them to invoke the context menu.

Alternatively, use the [Device Delete] option in the Task pane.

2. Select the [Delete] option to invoke the [Confirm Delete Device] dialog box.



3. Click [Yes] to proceed with the removal of the device and all related information.

Confirmation or otherwise of the operation will be recorded in the console log and the Site view will be refreshed accordingly.

2.3 Manage the Network Environment

All Storage Server services and Storage Management Server services must be running when these changes are made.

Point

This procedure only updates the network information stored in the AdvancedCopy Manager repository. To change the IP address, port number or server name of a Storage Server, it is necessary that the network environment of the operating system must be reconfigured manually. This procedure does not change the operating system's network parameters. Also, the AdvancedCopy Manager daemons or services must be stopped and started before and after this procedure as well.

2.3.1 Modify Storage Management Server Information

To modify Storage Management server information, execute `stgxfwcmmodsrv` (Server information change command) with the `-f` option specified.

For details on "`stgxfwcmmodsrv` (Server information change command)", refer to "Commands" - "`stgxfwcmmodsrv` (Server information change command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the relevant operating system.

2.3.2 Modify Storage Server Information

The following Storage Server information can be modified:

- Server name
- Storage Server IP address

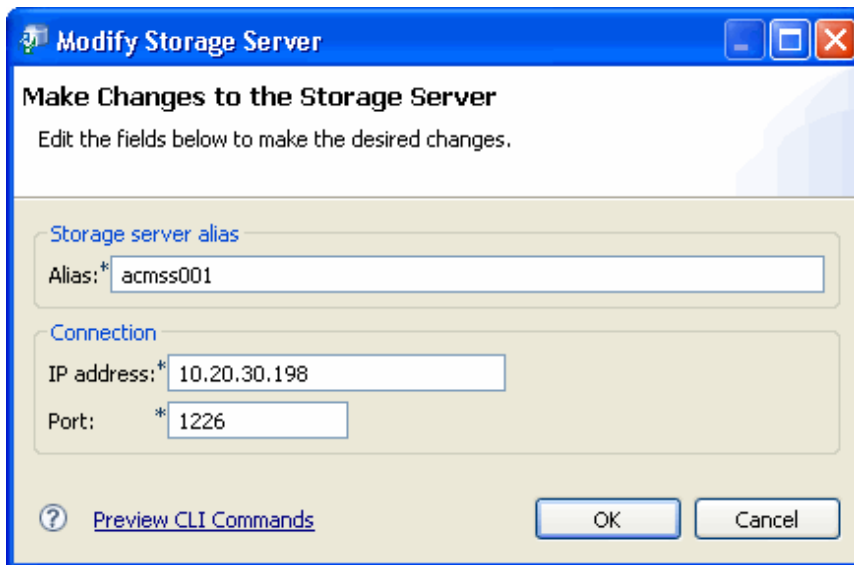
- Storage Server port number

Before proceeding, modify the server name (alias), IP address and port number of the Storage Server. For details on how to do that, refer to the "AdvancedCopy Manager Operator's Guide", section "Operational Maintenance" > "Changing the Operating Environment".

1. Select a single Storage Server from the Site view.
2. Right-click the selected Storage Server and select the [Modify] option. The [Modify Storage Server] dialog box is displayed.

The following information is required to be provided:

- Alias : Id or name for the purposes of display only
- IP address : IP address of the Storage Server to be modified
- Port : Port number for communicating with the Storage Management Server.



3. Modify the Storage Server information, then click [OK].

2.4 Manage User Access and Permissions

2.4.1 View User Accounts

Only the Windows start-up account and UNIX root users, as specified during AdvancedCopy Manager installation, can view account information for any or all users.

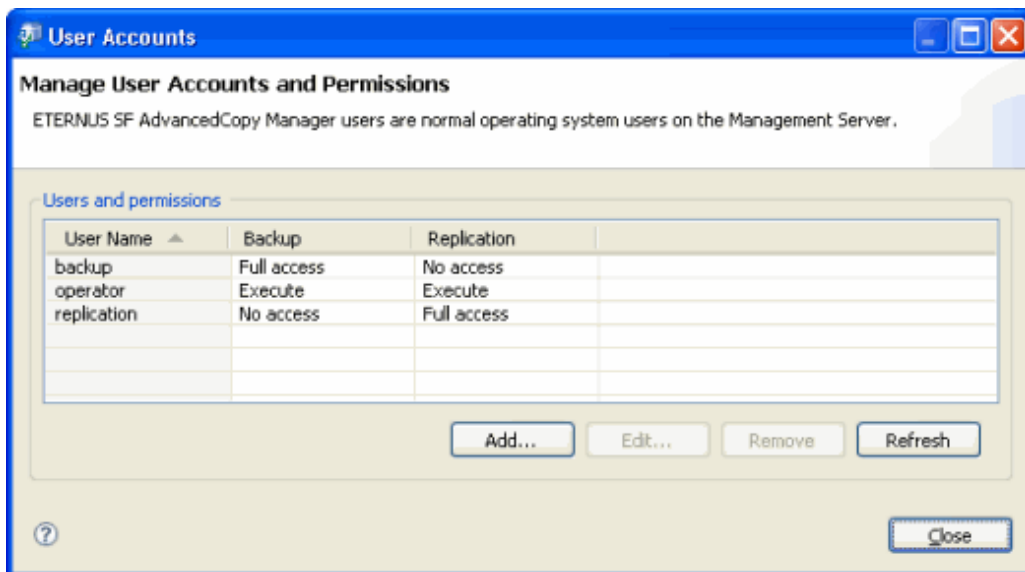
If the user is NOT the start-up account specified during installation, the menu item [User Accounts] and the relevant toolbar icons are disabled.

1. Click the User Accounts icon from the main application toolbar to invoke the [User Accounts] dialog box.

The dialog box details the following information according to the user's access:

- Current User
- Backup Permissions

- Replication Permissions



2. Click [Close].

Point

- If the user is a root user (in UNIX) or the start-up account specified during installation (in Windows) then the table inside the Users group is enabled and all AdvancedCopy Manager users are listed. However the root/start-up users (including the current user) are not shown in the table, so they cannot be deleted or their permissions changed (they are assumed to have full access).
- With a Windows management server, users in the Administrators group have the text "(admin)" appended to their user name. Permissions for users in this group cannot be edited, as they are assumed to be full access.
- The [Add], [Edit] [Remove] and [Refresh] buttons are only enabled for root or administrator users.

Information

In the following conditions, a user who installed the Manager of AdvancedCopy Manager is displayed in the dialog box. If you prohibit its user from operating GUI Client, delete its user by referring the "2.4.4 Remove a User".

- The OS platform of Storage Management Server is Windows, and
- The user who installed the Manager of AdvancedCopy Manager is different from the "startup account" user.

2.4.2 Add a New User

Only the Windows start-up account specified during AdvancedCopy Manager installation or the UNIX root user can add users.

The following steps describe how to add a user and set up access permissions.

1. Select [User Accounts] to invoke the [User Accounts] dialog box.
2. Click [Add] to invoke the [Add Users] dialog box.

The Operating System users list contains all operating system level users of the Storage Management Server that do not already have access to AdvancedCopy Manager.

3. Select one or more users in the users list to enable the [Add User >] button.
4. Click [Add User >] to add these users to the [Users to add] list to the right.

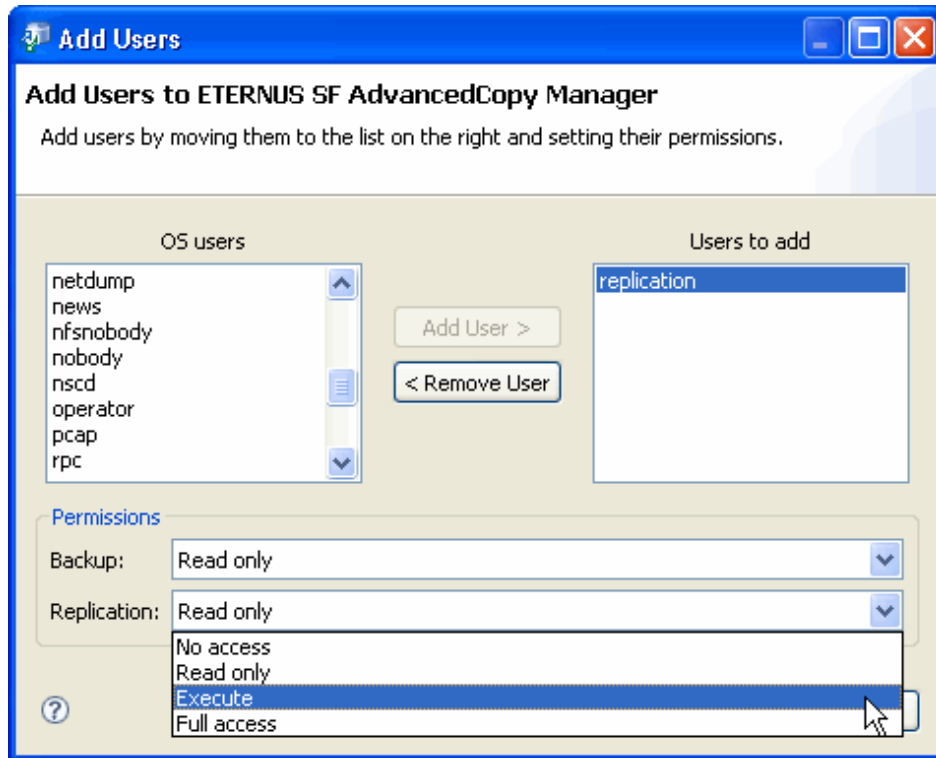
Conversely, double-click a user in either list to move that user to the other list.

Selecting one or more users in the [Users to add] list and clicking [< Remove User] removes the selected users from the [Users to add] list and places them back into the [OS users] list.

5. Select one or more users in the [Users to add] list to enable the permissions combo box in the Permissions form at the bottom of the dialog box.

You must select the user's permissions for both backup and replication.

6. Click [OK] to add the selected users to AdvancedCopy Manager and close the dialog box.



Click [Cancel] to close the dialog box at any time without performing any operation.

7. Click [Refresh] in the [User Accounts] dialog box to check that the user's status and permissions are correct. Any users that are successfully added will immediately be listed in the [User Accounts] dialog box.

Point

- If the right hand list [Users to add] contains one or more users from the Windows Administrator's group, then the permissions for all users to be added will default to Full access in accordance with the permissions of the Administrator's user id.
- It is not possible to set both backup and replication permissions as giving no access for a user.
- If one or more users cannot be added, an information-only dialog box with the message "Not All Users Could be Added" is displayed. The message will also table those users that could not be added, and reasons for the failure to add. Click [OK] to close the message.

2.4.3 Edit User Permissions

Only the UNIX root user or the Windows start-up account specified during AdvancedCopy Manager installation can change user permissions.

1. From the main application select [File] > [User Accounts] to open the [User Accounts] dialog box, and select one or more users in the table.

Alternatively, click the [User Accounts] icon from the main toolbar.

- Click [Edit] to invoke the [Edit User Permissions] dialog box.

Permissions for both backup and replication must be set separately.

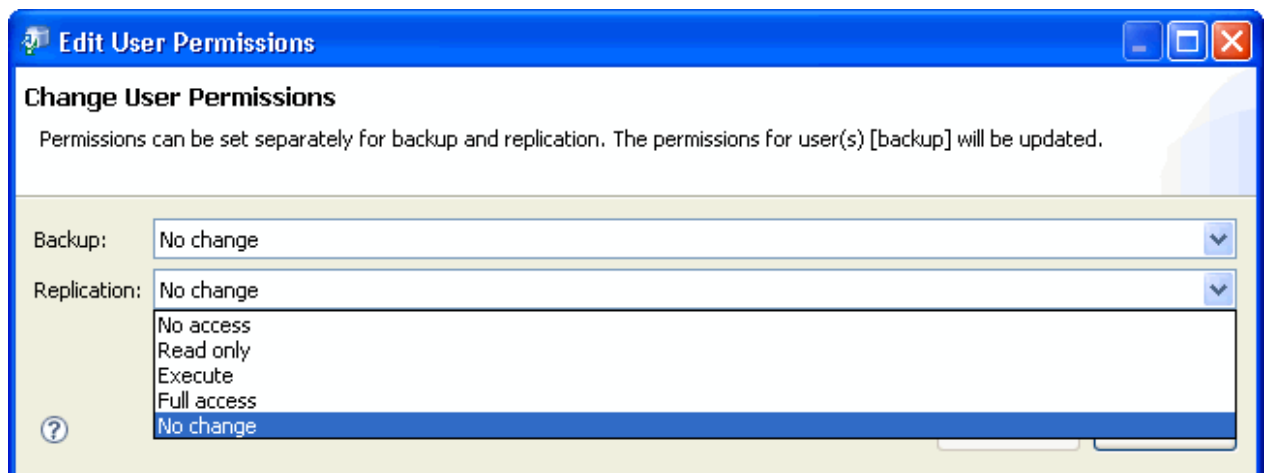
The following table shows access permission details.

Table 2.1 Access permission details

Operation	Full access	Execute	Read only
Server information display	Yes	Yes	Yes
Device information display	Yes	Yes	Yes
Partition information display	Yes	Yes	Yes
Display item modification	Yes	Yes	Yes
Refresh	Yes	Yes	Yes
Check devices using same copy area	Yes	Yes	Yes
Check devices in same logical group	Yes	Yes	Yes
Add server	Yes	No	No
Change server	Yes	No	No
Delete server	Yes	No	No
Add or delete devices for all devices	Yes	No	No
Add or delete devices a specific device	Yes	No	No
Delete device	Yes	No	No

The default is No Change.

- Open the combo box to reveal the range of allowable permissions for all users selected in the [User Accounts] dialog box, and select a permissions attribute as appropriate.



- Click [OK] to change the permissions for the selected user/s and close the dialog box.

If permissions for one or more users cannot be changed, an information-only dialog box with the message

"Permissions could not be changed for all users" is displayed.

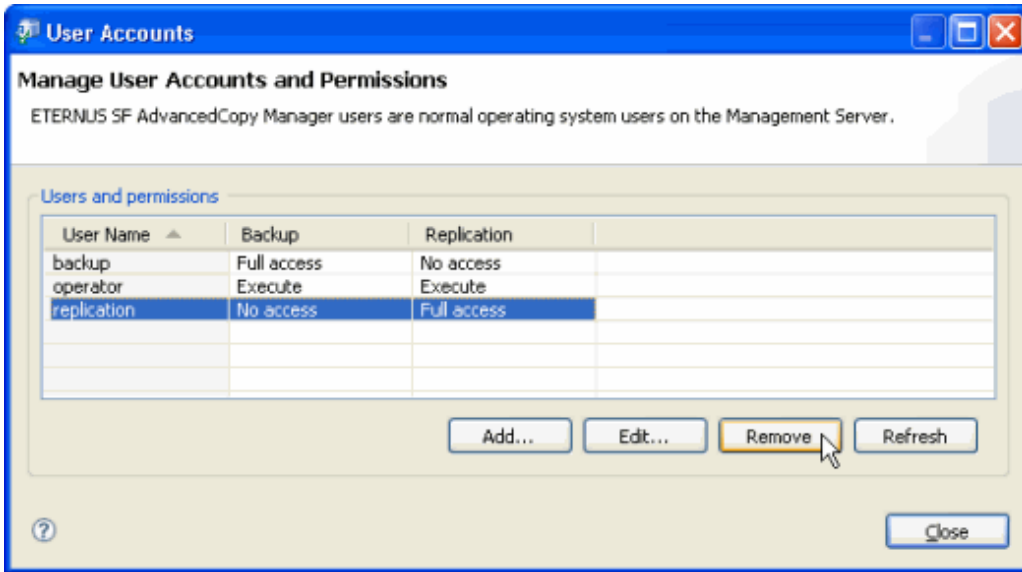
The message will also table those users for whom permissions could not be changed with reasons for failure. Click [OK] to close the dialog box.

2.4.4 Remove a User

Only UNIX root users or the Windows start-up account specified during AdvancedCopy Manager installation can change user permissions.

The following steps describe how to remove a user and associated access permissions.

1. Click the [User Accounts] from the [File] menu to invoke the [User Accounts] dialog box.



2. Select one or more users, then click [Remove] - the [Confirm Delete] dialog box is displayed.
3. Click [Yes] to remove the selected users.

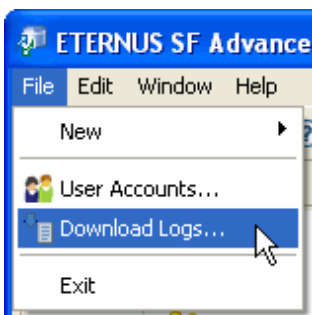
If one or more users cannot be removed, an information-only dialog box with the message "Not all users could be removed" is displayed. The message will also table the users that could not be removed with reasons for the failure. Click [OK] to close the dialog box.

2.5 Download Logs

This function collects the log files which are used to troubleshoot an error caused by the GUI Client. Use this function to collect the log files and to send a zip file of the logs to the support center if it is required.

Collect the log files as follows.

1. From the [File] menu, select [Download Logs].



2. In the [Save As] dialog box, enter the zip file name with which to save the logs. Click the [Save] to collect the log files and save them as a zip file.

Point

If you cannot operate the GUI client, execute "acmcapture (Troubleshooting data collection command)" on the GUI client as well as on the Storage Management Server to collect survey information.

For details on "acmcapture (Troubleshooting data collection command)" for the GUI client, refer to "Commands" - "acmcapture (Troubleshooting data collection command)" in "ETERNUS SF AdvancedCopy Manager Operator's Guide (Windows)".

For details on "acmcapture (Troubleshooting data collection command)" for the Storage Server, refer to "Commands" - "acmcapture (Troubleshooting data collection command)" in the "ETERNUS SF AdvancedCopy Manager Operator's Guide" for the relevant operating system.



Chapter 3 Backup

This chapter describes how to use the backup function using the AdvancedCopy Manager GUI Client.

For details on the backup functionality, refer to the "AdvancedCopy Manager Operator's Guide", section "Backup Operations".

For details on the settings required for the backup function, refer to "[Chapter 2 Maintenance and Configuration](#)".

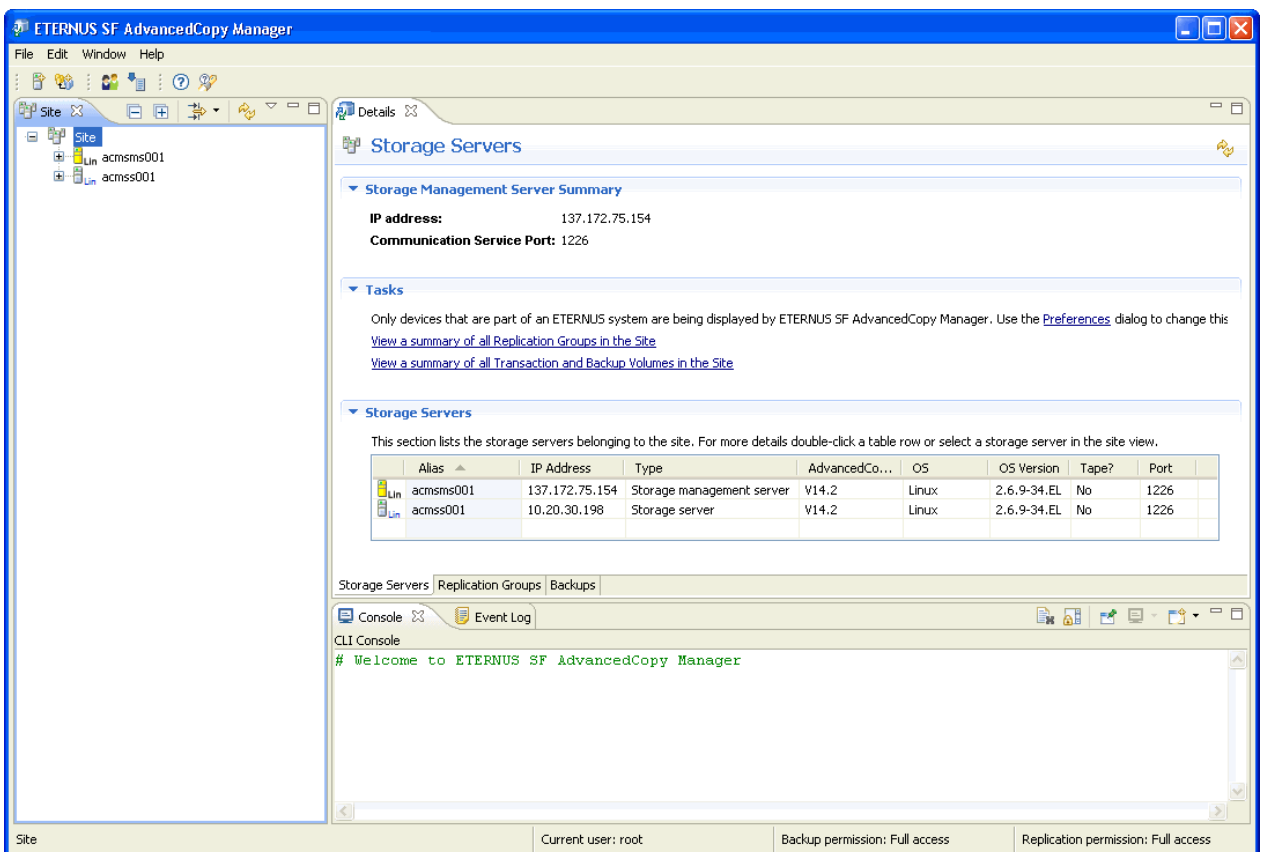
3.1 View Volume Information

3.1.1 View Summary of All Transaction and Backup Volumes at the Site

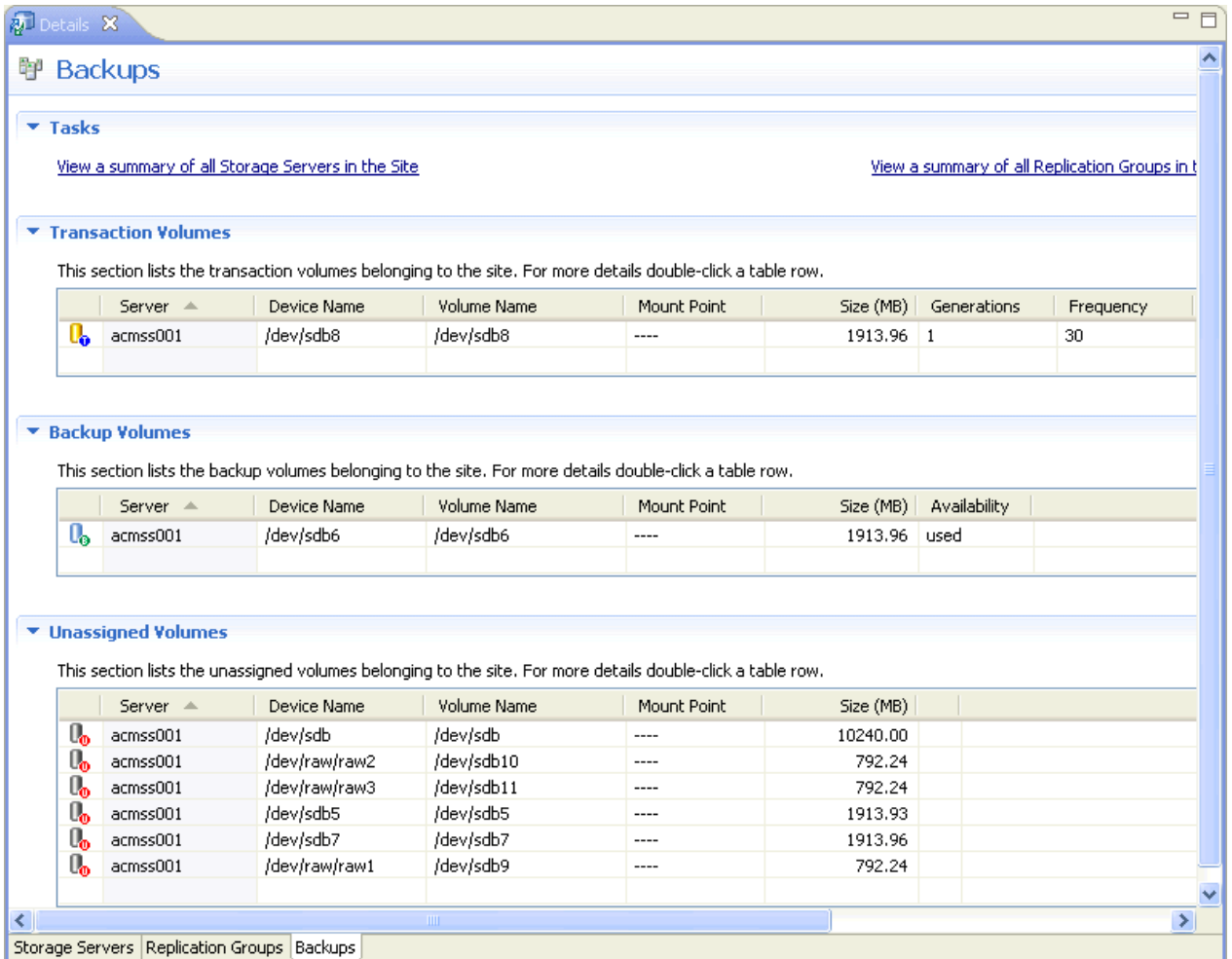
A Site view will show all transaction, backup and unassigned volumes for the site in a single tabbed view.

To invoke a Site view, the user should perform the following procedure:

1. Click on the [Site] icon of the Site view tree to populate the perspective with Storage Management Server and Storage Server information relating to the site in the Details view.



- Click the [Backups] tab at the bottom of the Details view to display a form showing information relating to all transaction, backup and unassigned volumes at the site.



A Tasks form provides a series of links to related information or common tasks.

The Transaction Volumes form details all devices that have been defined as transaction volumes at the site.

Double-click any table row to refresh the Details summary view with specific information about the selected transaction volume.

The following information is provided in the Transaction Volumes form:

Label	Description
Device Name	Displays a device name.
Volume Name	Displays a volume name.
Mount Point	Displays a transaction volume mount point name (drive letter). When the volume is a Symfoware transaction volume, the Symfoware RDB system name and group name, and the DBS name are displayed.
Volume Size (MB)	Displays a volume size. Displays the size of the area that is actually used for copying for VxVM logical volume.
Generations to keep	Displays the number of generations to keep, that is set for the backup policy.
Suggested Backup Frequency (days)	Displays the backup frequency (in days) that is set for the backup policy.
Current Status	Displays processes that are currently under execution.

Label	Description	
	"----"	Nothing (a command/OPC/EC) is being executed
	"swststartsync"	Backup synchronous processing start command is being executed
	"swstcancelsync"	Backup synchronous processing cancel command is being executed
	"swstbackup"	The backup execution command is being processed
	"swstrestore"	The restore execution command is being processed
	"swstcancelrest"	The restore cancellation command is being processed
	"swstbkpolset"	The backup policy setting command is being processed
	"swstbkpoldel"	The backup policy deletion command is being processed
	"swsthistdel"	The history information deletion command is being processed
	"swstcanceltrk"	The tracking cancel command is being processed
	"sync(%)"	Progress rate of backup synchronization
	"sync(failed)"	EC has terminated abnormally
	"sync(halt)"	EC is in halt status
	"snapshot(%)"	Progress rate of backup using OPC
	"snapshot(failed)"	Backup using OPC has terminated abnormally
	"snapshot(halt)"	Backup using OPC has been halted
	"restore(%)"	Rate of progress of restoration
	"restore(halt)"	Restoration using OPC has been halted
	"gds-error"	Copying with GDS has terminated abnormally.
Time when last backup started (local time on Storage Server)	Displays the time when the data was last backed up.	
Days Overdue for Backup	If the number of days specified for the interval following the last time a backup was taken has elapsed, this number of days is displayed.	

Table 3.1 Additional Transaction Volume Information

Label	Description
Abs. Generation	Displays the absolute generation number. If the generation number for the data that was first backed up is 1, the generation for the new data will be 2.
Rel. Generation	Displays the relative generation number. Whenever data is backed up, the generation number for the data that was first backed up is reassigned, so the generation for the new data will always be 1.
Backup Date	Date and time last backup started
Backup Volume	Backup volume
Status	Displays the backup data copy status. Valid values are: "succeeded", "executing (%)", "failed", "halt", "gds-error"
Progress	Copy progress
ArcSerial	Not used for the English version

The Backup Volumes form details all devices that have been defined as backup volumes at the site. Double-click any table row to refresh the Details summary view with specific information about the selected backup volume.

The following information is provided in the Backup Volumes form:

Label	Description
Device Name	Name of the backup volume
Volume Name	Name of the backup volume
Mount Point	Backup Volume Mount point (drive letter). If the volume is a Symfoware transaction volume, the Symfoware RDB system name or group name and the DBS name, and so on, are displayed.
Size (MB)	Displays a volume size. Displays the size of the area that is actually used for copying for VxVM logical volume.
Volume Availability	Displays "free" or "used" for the backup volume status. - free : There is volume available - used : Volume generations are being managed

The Unassigned Volumes form details any volumes yet to be assigned a specific role for backup at the site.

Double-click any table row to refresh the Details summary view with specific information about the selected unassigned volume.

The following information is provided in the Unassigned Volumes form:

Label	Description
Device Name	Name of the backup volume
Volume Name	Name of the backup volume
Mount Point	Displays a transaction volume mount point name (drive letter). When the volume is a Symfoware transaction volume, the Symfoware RDB system name and group name, and the DBS name are displayed.
Size (MB)	Displays a volume size. Displays the size of the area that is actually used for copying for VxVM logical volume.

3.1.2 View Summary of All Volumes for a Specified Storage Server

A Server view will show all groups and devices associated with a specific Storage in a single view.

To invoke a Server view, the user should perform the following procedure:

1. Click on the [Site] root node of the [Site] node to refresh the Site view.

2. Select a [Backups] node for a Storage Server and click to refresh the Details view with device information by operation type in a form for each of the three Volume operation types (Transaction, Backup and Unassigned).

For the description of labels, refer to "3.1.1 View Summary of All Transaction and Backup Volumes at the Site".

Details ✕

Backups for acmss001

Tasks

[Set the Server Backup Configuration](#) [Set the Volume Type of each Volume on this Storac](#)

Transaction Volumes

This section lists the transaction volumes belonging to this server. For more details double-click a table row.

Device Name ▲	Volume Name	Mount Point	Size (MB)	Generations	F
/dev/sdb8	/dev/sdb8	----	1913.96	1	31

Backup Volumes

This section lists the backup volumes belonging to this server. For more details double-click a table row.

Device Name ▲	Volume Name	Mount Point	Size (MB)	Availability
/dev/sdb6	/dev/sdb6	----	1913.96	used

Unassigned Volumes

This section lists the unassigned volumes belonging to this server. For more details double-click a table row.

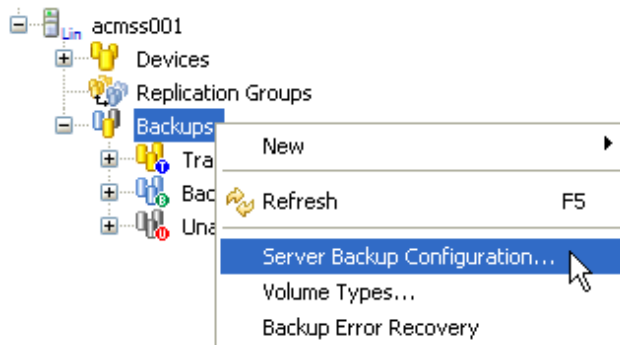
Device Name ▲	Volume Name	Mount Point	Size (MB)
/dev/raw/raw1	/dev/sdb9	----	792.24
/dev/raw/raw2	/dev/sdb10	----	792.24

Overview

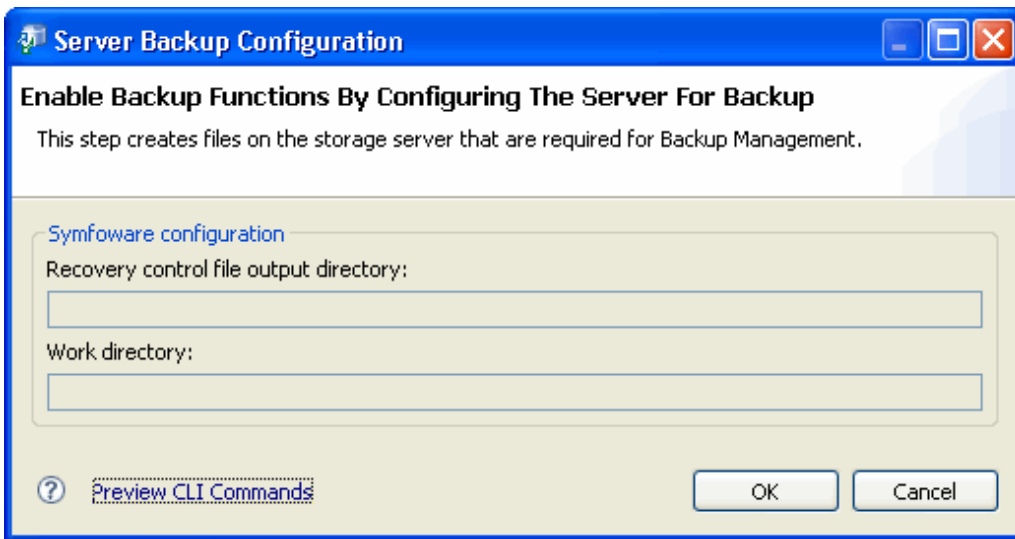
3.2 Enable Backup for a Storage Server

Backup functionality must be enabled for each Storage Server on which backup is to be invoked.

1. Right-click on the [Backups] node in the Site tree to invoke the context menu.



2. Select the [Server Backup Configuration] option to invoke the [Server Backup Configuration] dialog box.



3. Click [OK] to enable backup for the Storage Server.

3.3 Configure a Device for Use with Backup

Before a backup can be performed, the device must be defined explicitly as either a transaction volume or a backup volume. A device may remain unassigned indefinitely but will not be available for use in any backup until its operation type has been defined.

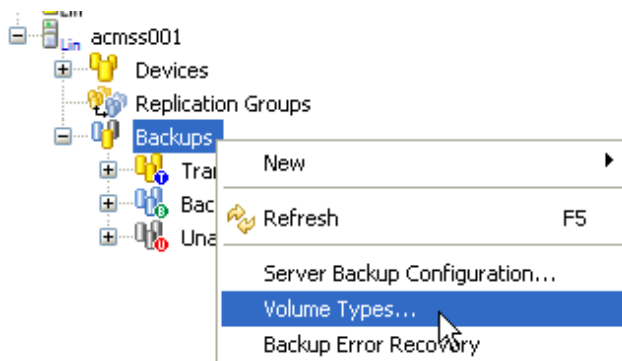
A device may also be defined as both a replication source device and a transaction volume but cannot be both a replication device and a backup volume.

The backup volume must be the same size (that is, the same number of bytes) as the transaction volume.

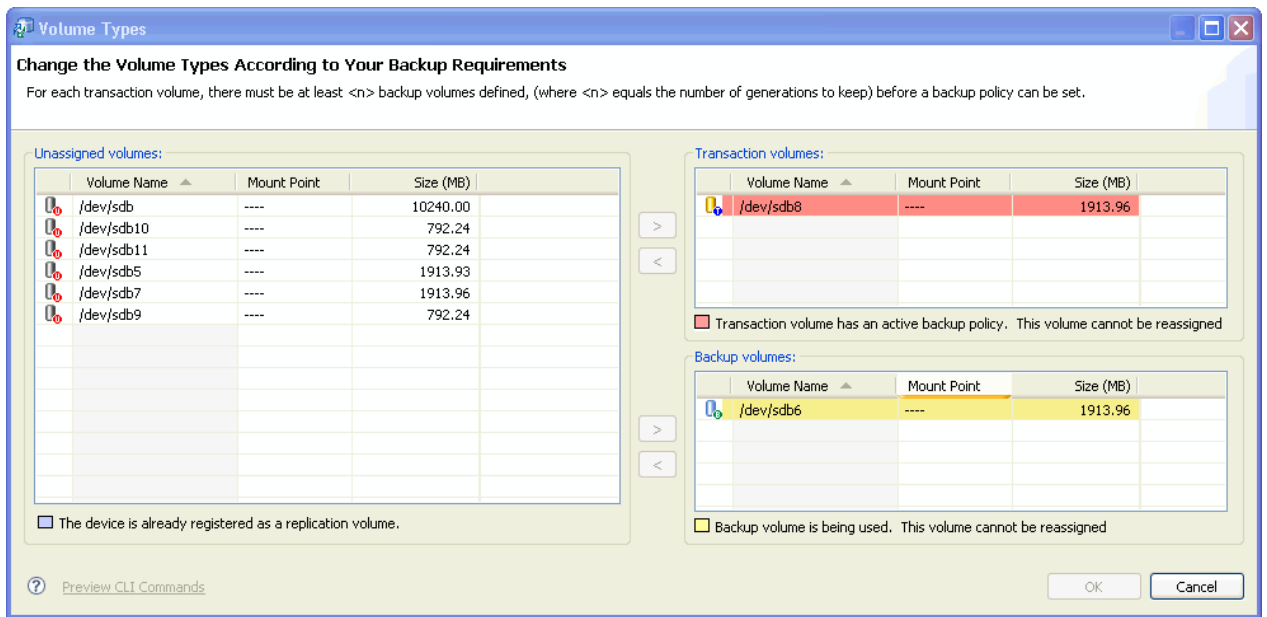
3.3.1 Define the Role of a Volume

Define the role of a transaction or backup volume in accordance with the following steps:

1. Select the [Backups] node from the Site view and right-click to invoke the backup context menu.



2. Select the [Volume Types] option to invoke the [Volume Types] dialog box.



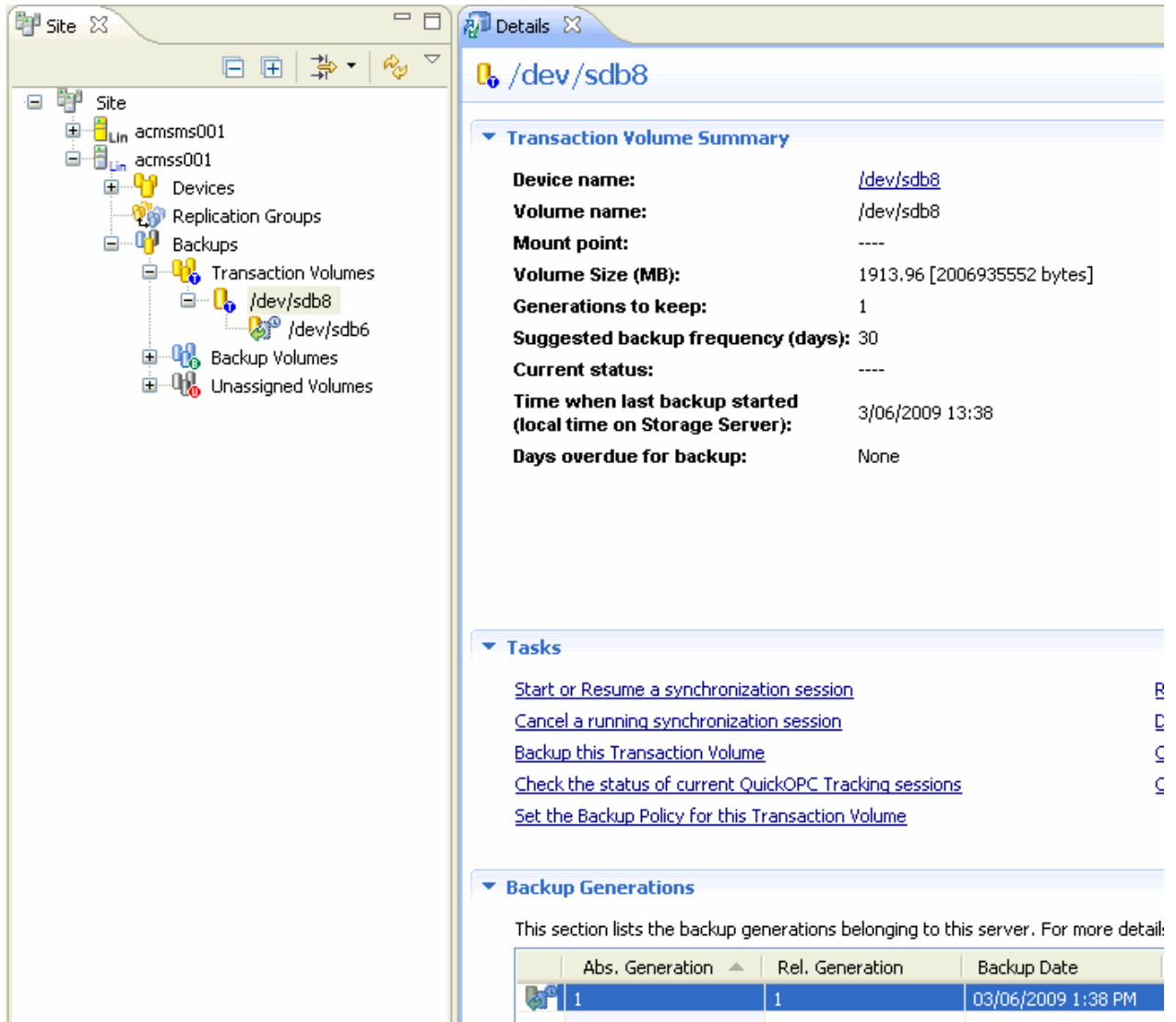
3. Select a volume from the Unassigned volumes pane and click the appropriate [>] button to move the volume to either the Transaction volumes pane or the Backup volumes pane on the right hand side of the dialog box.
4. Click [OK] to continue to set the operation type for the selected volume/s.

3.3.2 Remove a Transaction Volume

When deleting a transaction volume, it is important to ensure that all of the following steps are completed beforehand.

1. Select the transaction volume to be deleted in the Site view to refresh the Details view with the transaction volume summary information.

Any current backup policy and history information will be displayed in the summary.



2. Delete any backup history for the transaction volume to be removed - for details, refer to "3.7.2 Delete Backup History".
3. Delete any backup policies that have been set for volume that is to be deleted - for details, refer to "3.4.2 Delete Backup Policy".
4. Set the operation type for the volume or device to "unassigned" - for details, refer to "3.3.1 Define the Role of a Volume".

3.3.3 Remove a Backup Volume

When deleting a backup volume, it is important to ensure that the steps are completed in the following order.

1. Check all existing backup policies for any transaction volumes with which the volume may be associated. See note below.
2. Ensure that the backup volume is unused. That is, that it does not exist in any backup history.

Select the [Backup Volumes] node for the relevant host Storage Server to refresh the Details view with information relating to all backup volumes for the selected Storage Server.

If the availability status is "free", then there is no current backup history.

If the status is "used", then the volume has current backup history.

The screenshot shows a backup management interface. On the left is a tree view for server 'acmss001' with categories: Devices, Replication Groups, Backups, Transaction Volumes, Backup Volumes, and Unassigned Volumes. The main area contains two configuration panels:

Transaction Volumes

This section lists the transaction volumes belonging to this server. For more details double-click a table row.

Device Name	Volume Name	Mount Point	Size (MB)	Generations
/dev/sdb8	/dev/sdb8	----	1913.96	1

Backup Volumes

This section lists the backup volumes belonging to this server. For more details double-click a table row.

Device Name	Volume Name	Mount Point	Size (MB)	Availability
/dev/sdb6	/dev/sdb6	----	1913.96	used
/dev/sdb7	/dev/sdb7	----	1913.96	free

The backup generation history must be deleted before proceeding to the next step.

For details on how to delete backup history, refer to "3.7.2 Delete Backup History".

3. Delete the device information for the volume.

For details on how to delete device information, refer to "3.3.1 Define the Role of a Volume".

Point

- If a backup volume is deleted, a previously defined backup policy for an existing transaction volume may no longer be valid. For example, if the number of backup volumes is then less than the number of preservation generations defined in the policy, this backup policy can no longer be used.
- If a backup policy references any backup volume which is to be deleted, you must
- First register a replacement backup volume and associate it with the relevant policy
- Modify the policy to reduce the number of backup volumes required to maintain the policy.
- To maintain the validity of the backup policy, this must be done before deleting the backup volume.

3.4 Manage Backup Policy

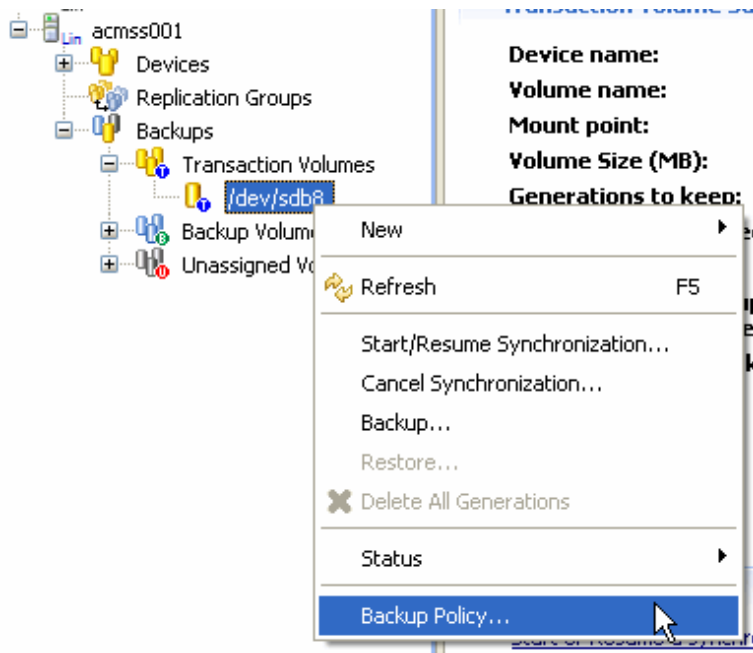
This section describes how to set and delete backup policy and display or delete backup history for one or more transaction volumes.

3.4.1 Set Backup Policy

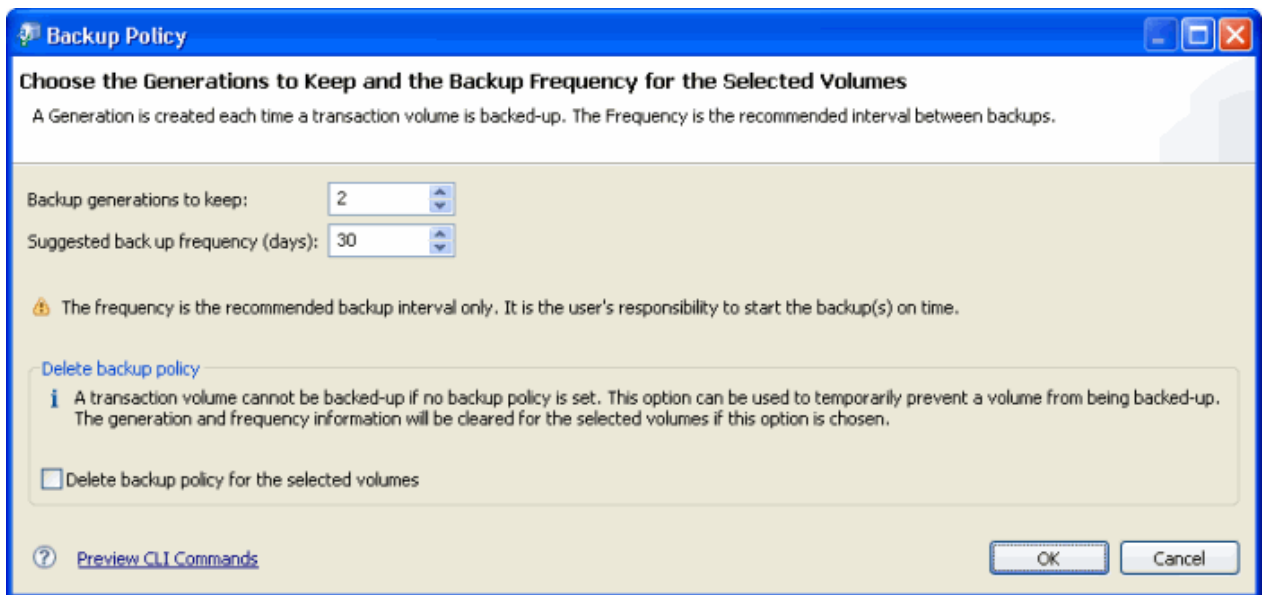
Ensure the devices have been configured as described in the previous chapter.

Set the backup policy using the following procedure:

1. Select a transaction volume from the Site view and right-click it to invoke the backup context menu.



2. Select the [Backup Policy] menu item to invoke the [Backup Policy] dialog box.



3. Specify the number of backup generations required by the policy and the suggested frequency.

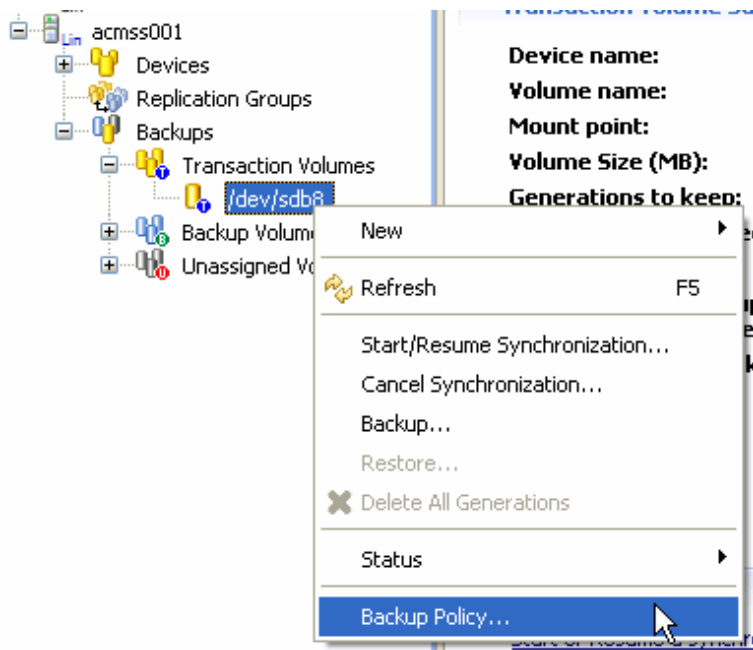
Label	Description
Backup generation to keep	Value range is 1 to 31 - default is 2 when setting a new policy. The previous value will be displayed if updating an existing policy.
Suggested back up frequency (days)	Value range is 1 to 366 - default is 30 when setting a new policy. The previous value will be displayed if updating an existing policy.

4. Click [OK] to register the policy and close the dialog box.

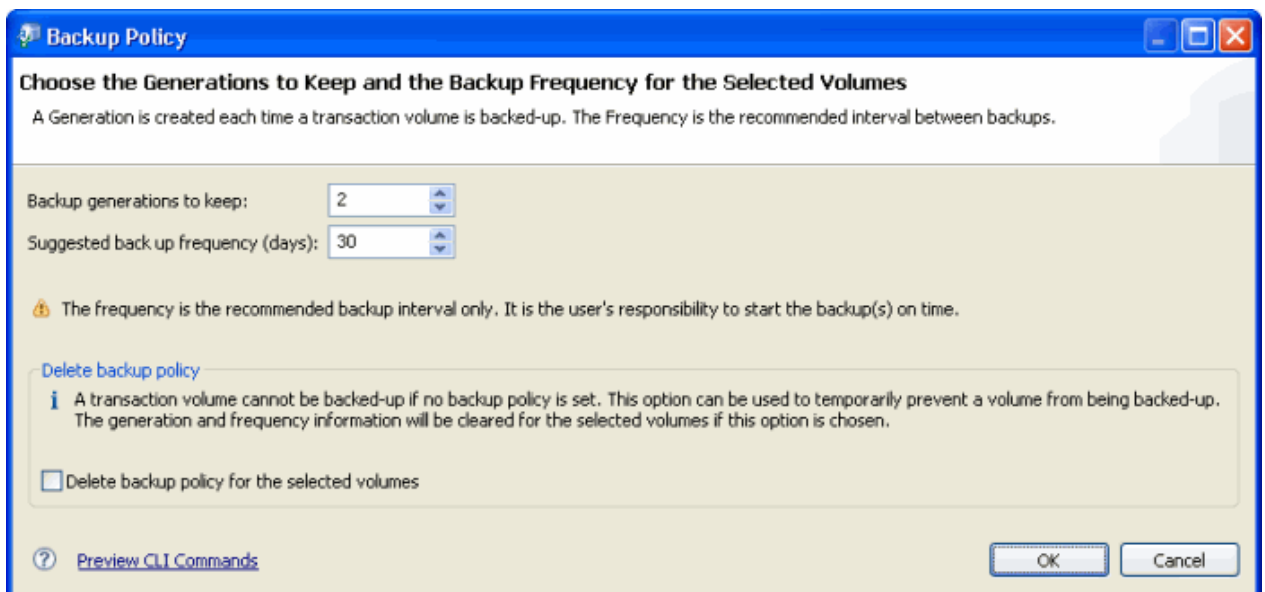
3.4.2 Delete Backup Policy

Delete a backup policy as follows.

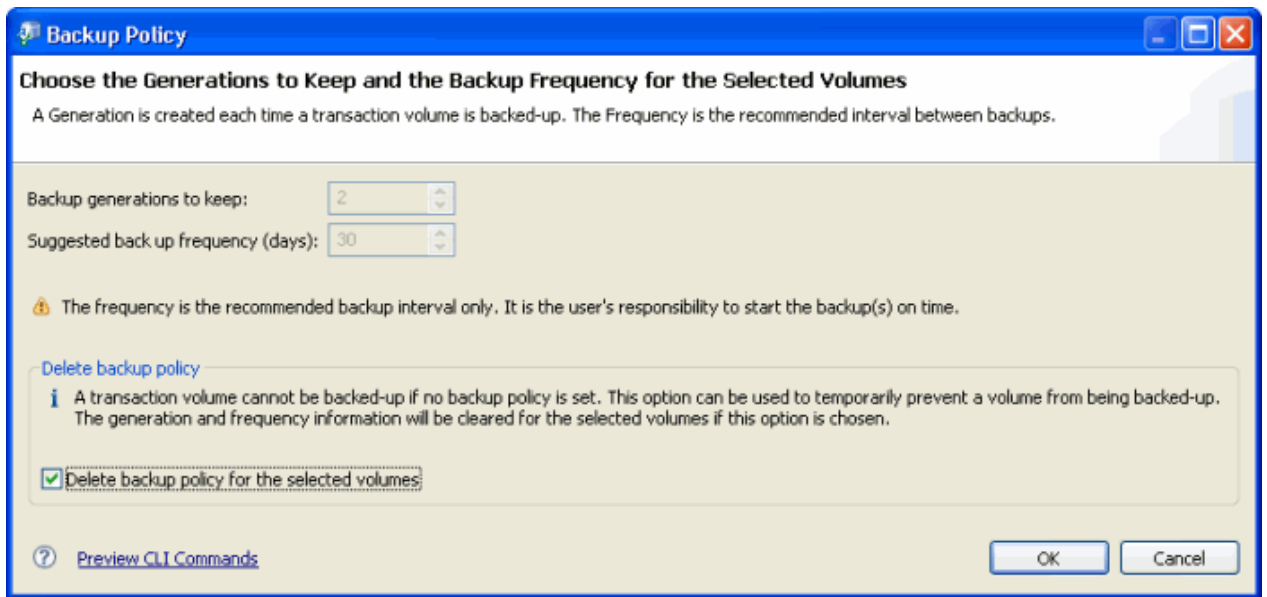
1. Select a transaction volume from the Site view and right-click it to invoke the backup context menu.



2. Select the [Backup Policy] menu item to invoke the [Backup Policy] dialog box.



3. In the [Backup Policy] dialog box, select the [Delete backup policy for the selected volumes] check box.



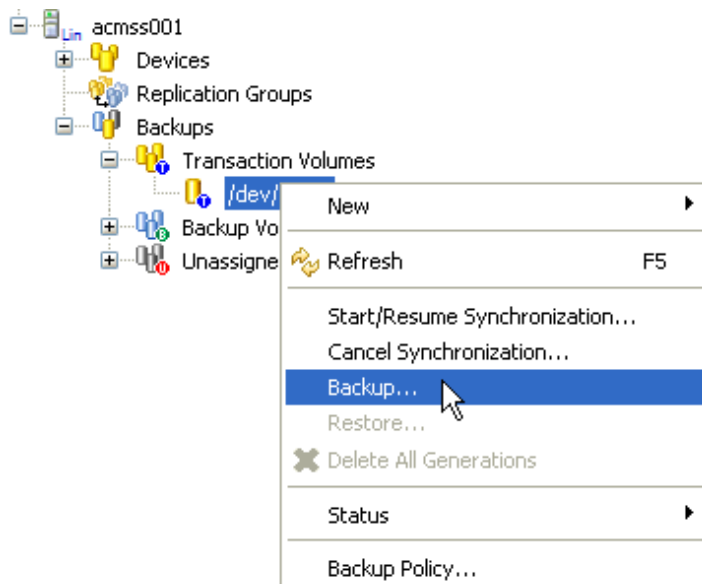
4. Click [OK] to delete the backup policy.

3.5 Perform a Snapshot Backup

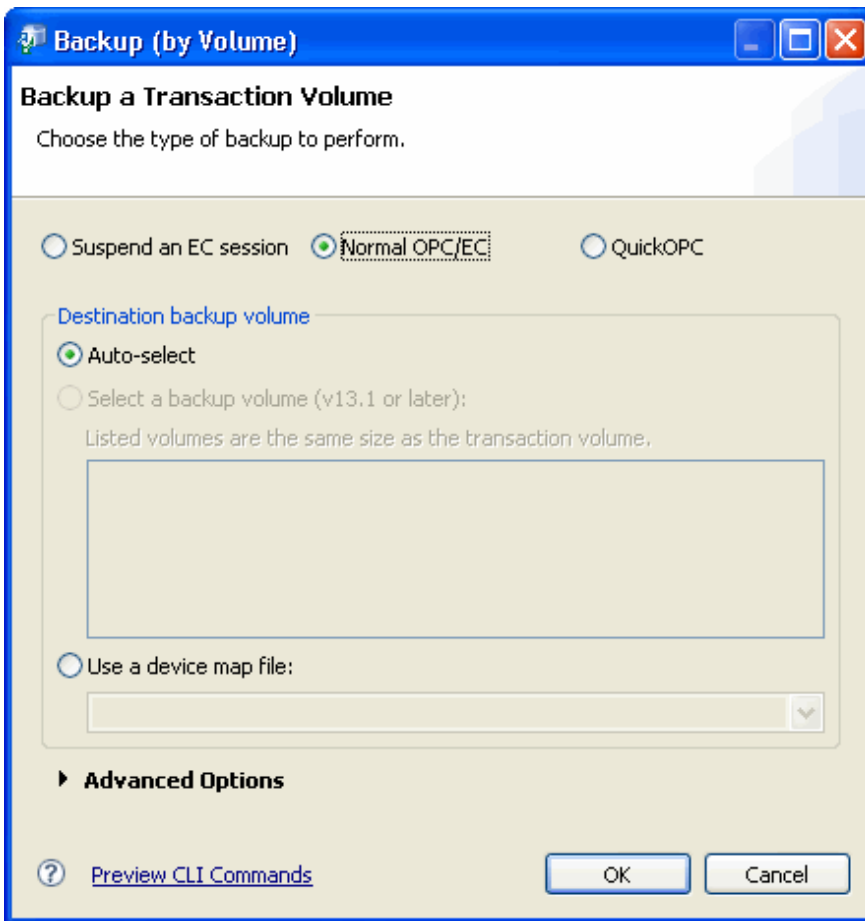
3.5.1 Backup with One Point Copy (OPC) or QuickOPC

The following procedure describes how to perform a snapshot backup.

1. Select a transaction volume from the Site view and right-click it to invoke the backup context menu.



2. Select the [Backup] item to invoke the [Backup] dialog box.



3. Select either the [Normal OPC/EC] or the [QuickOPC] option button at the top of the dialog box.
4. Select a backup method in the [Destination backup volume] group box.
 - Select [Auto-select] to have AdvancedCopy Manager automatically select a backup volume.
 - Select [Select a backup volume (v13.1 or later):] to select a backup volume from the list.
 - Select [Use a device map file:] to specify a device map file which defines the associated backup volumes. The device map file name must be specified in the full path name.
5. Click [OK] to start the backup.
6. The current copy status is not refreshed automatically. Right-click on the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

7. Upon completion of backup, the Details view is refreshed with the details of the latest backup generation.

The screenshot shows a web interface for a storage device. The main section is titled 'Transaction Volume Summary' and lists the following details:

- Device name: /dev/sdb8
- Volume name: /dev/sdb8
- Mount point: ---
- Volume Size (MB): 1913.96 [2006935552 bytes]
- Generations to keep: 1
- Suggested backup frequency (days): 30
- Current status: ----
- Time when last backup started (local time on Storage Server): 3/06/2009 13:38
- Days overdue for backup: None

Below this is a 'Tasks' section with several links:

- Start or Resume a synchronization session
- Cancel a running synchronization session
- Backup this Transaction Volume
- Check the status of current Restore sessions
- Restore the most recent Backup Generation
- Delete all Generations for this Transaction Volume
- Check the status of current Synchronization sessions
- Check the status of current QuickOPC Tracking sessions
- Set the Backup Policy for this Transaction Volume

The 'Backup Generations' section contains a table with the following data:

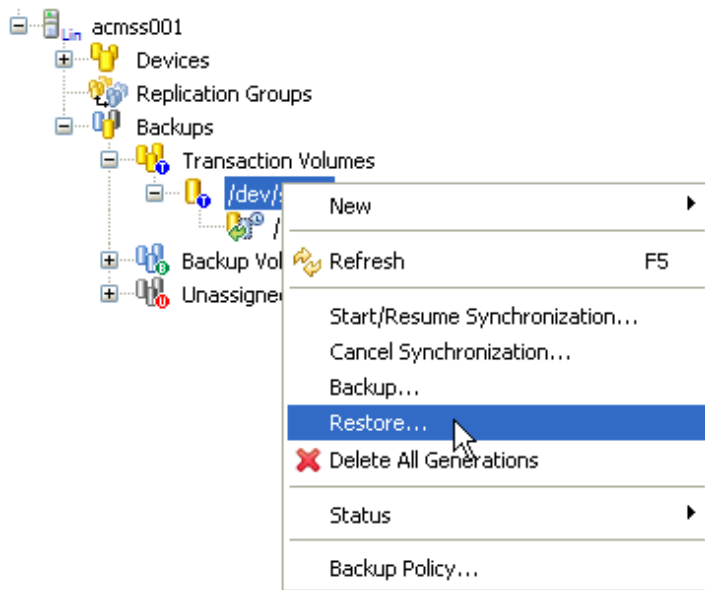
Abs. Generation	Rel. Generation	Backup Date	Backup Volume	Status	Progress	ArcSerial
1	1	03/06/2009 1:38 PM	/dev/sdb6	succeeded	----	n/a

At the bottom of the interface, there is an 'Overview' tab.

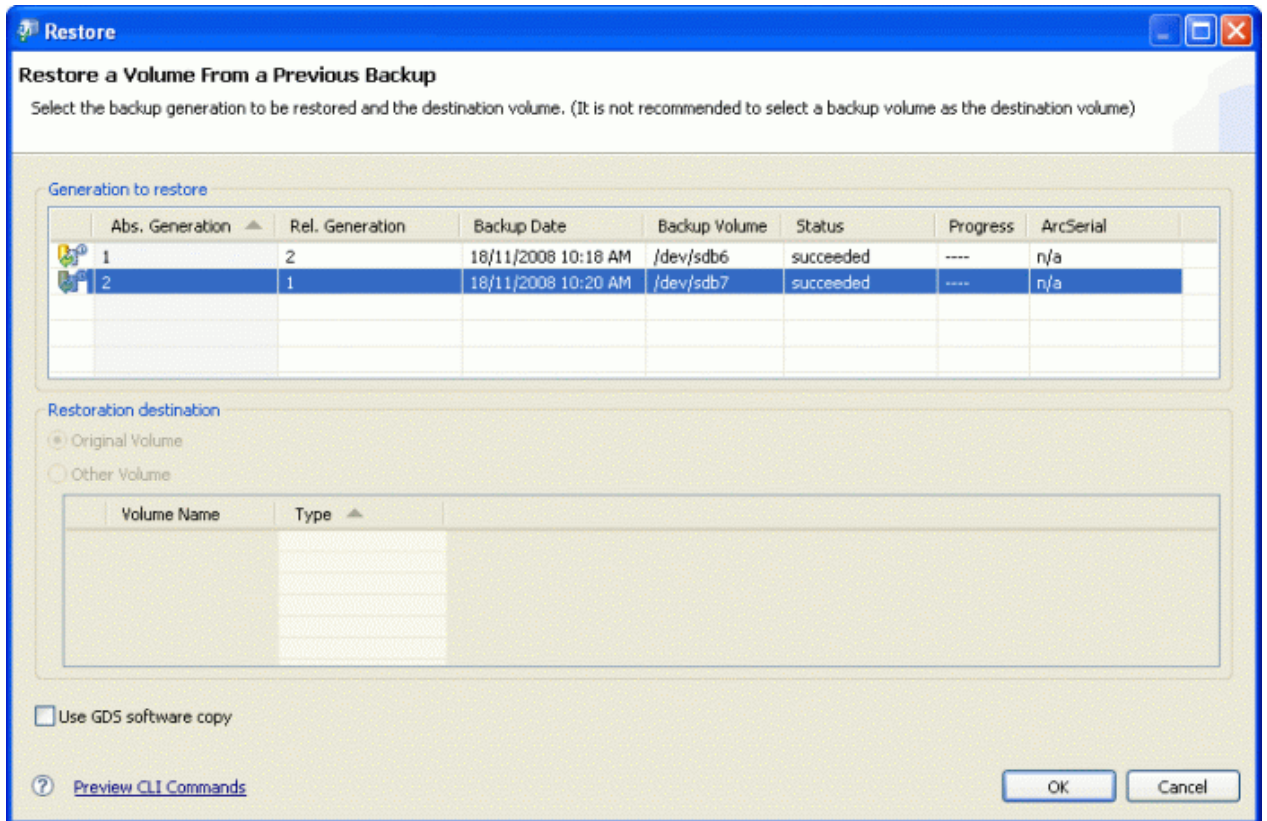
3.5.2 Restore

Perform restoration as follows.

1. Select the transaction volume to be restored from the Site view and right-click it to invoke the backup context menu.



2. Select [Restore] to invoke the [Restore] dialog box.



3. The most recent backup volume will always be highlighted in the Generation to restore form when the [Restore] dialog box displays. Select an appropriate generation if you wish to restore from an alternative backup generation.
4. If you wish to restore to an alternative destination volume, select [Other Volume] in the Restoration destination form and choose a device.
5. Click [OK] to continue.

- The current copy status is not refreshed automatically. Right-click on the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

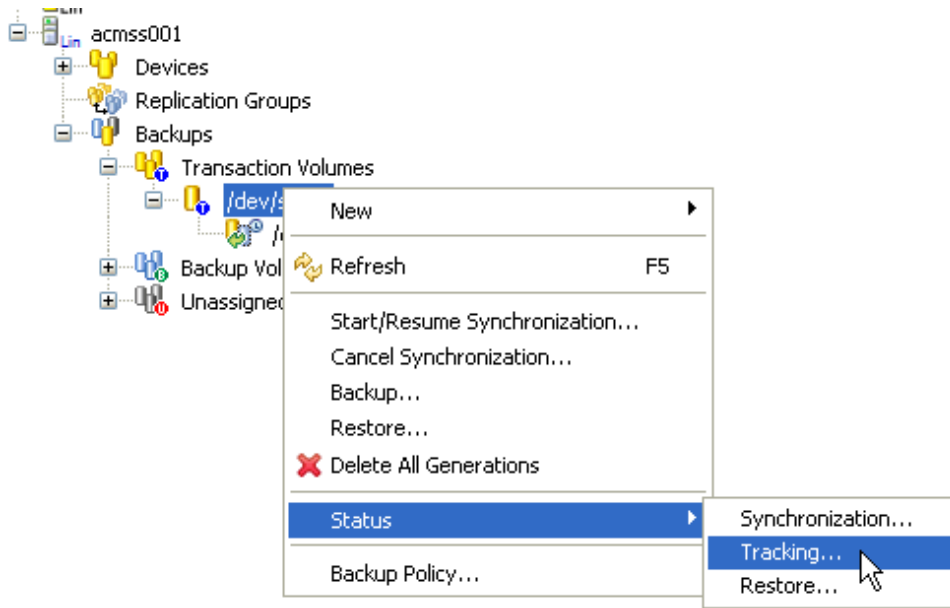
Point

The [Use GDS software copy] check box is only applicable when the transaction volume is GDS logical volume.

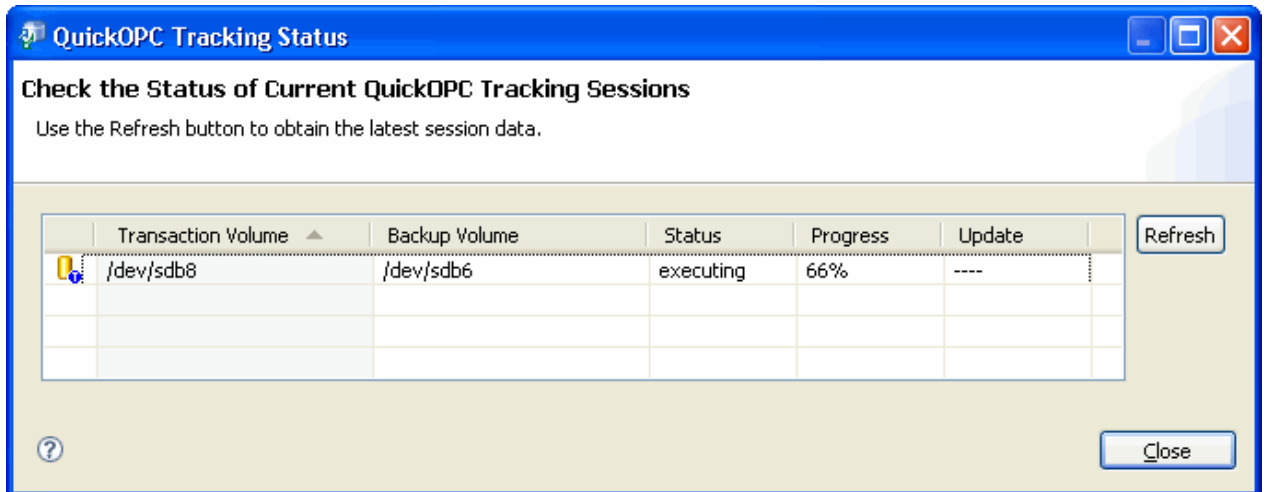
3.5.3 Display the Tracking Status of Any Current QuickOPC

Perform the following procedure to display the progress of any QuickOPC tracking.

- Select the desired transaction volume from the Site view and right-click it to invoke the backup context menu.



- Select the [Status] item from the context menu to display the [Status] submenu and then select [Tracking] to invoke the [QuickOPC Tracking Status] dialog box.



- Click [Refresh] to obtain the latest tracking status information for all backup volumes listed in the dialog box.

Label	Description
Transaction Volume	Displays a transaction volume name.
Backup Volume	Displays a backup volume name

Label	Description
	"----" is displayed when there is no tracking status.
Status	<p>Displays the execution status.</p> <ul style="list-style-type: none"> - "----" : There is no tracking status. - "executing" : Physical copy is in progress, and there is a tracking status. - "tracking" : There is a tracking status. - "failed" : Physical copy or tracking processing has terminated abnormally. - "nosession" : The session does not exist (the resource information does not match).
Progress	<p>When "executing" is displayed in the Status column, it indicates that amount that has been copied, as a percentage (%).</p> <p>"----" is displayed when "tracking" is displayed in the Status column.</p>
Update	<p>Shows the percentage (%) of updated data after logical copying, when "tracking" is displayed in the Status column.</p> <p>"----" is displayed when "executing" is displayed in the Status column.</p>

3.5.4 Cancel Tracking

Tracking for QuickOPC can not be performed using the AdvancedCopy Manager GUI Client and must be performed at the CLI using the Tracking Cancel command `swstcanceltrk`.

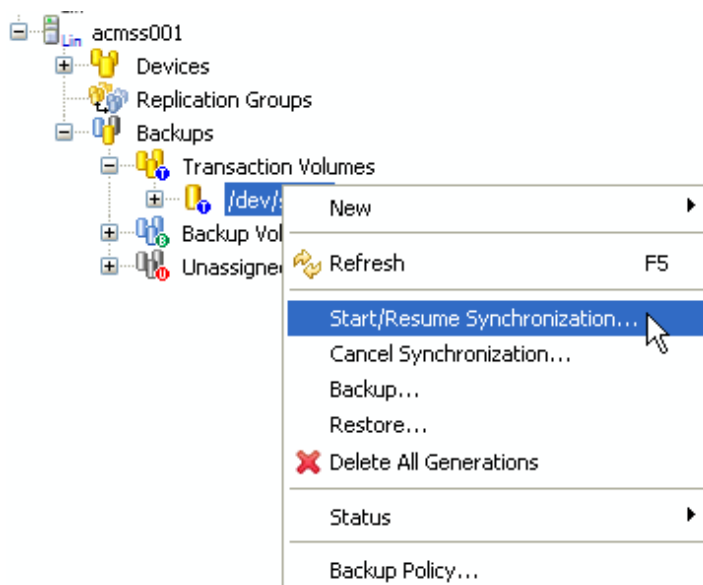
For details on this command, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Backup Management Commands" > "Operation commands" > "swstcanceltrk (Tracking cancel command)".

3.6 Perform an Equivalent Copy (EC) Backup

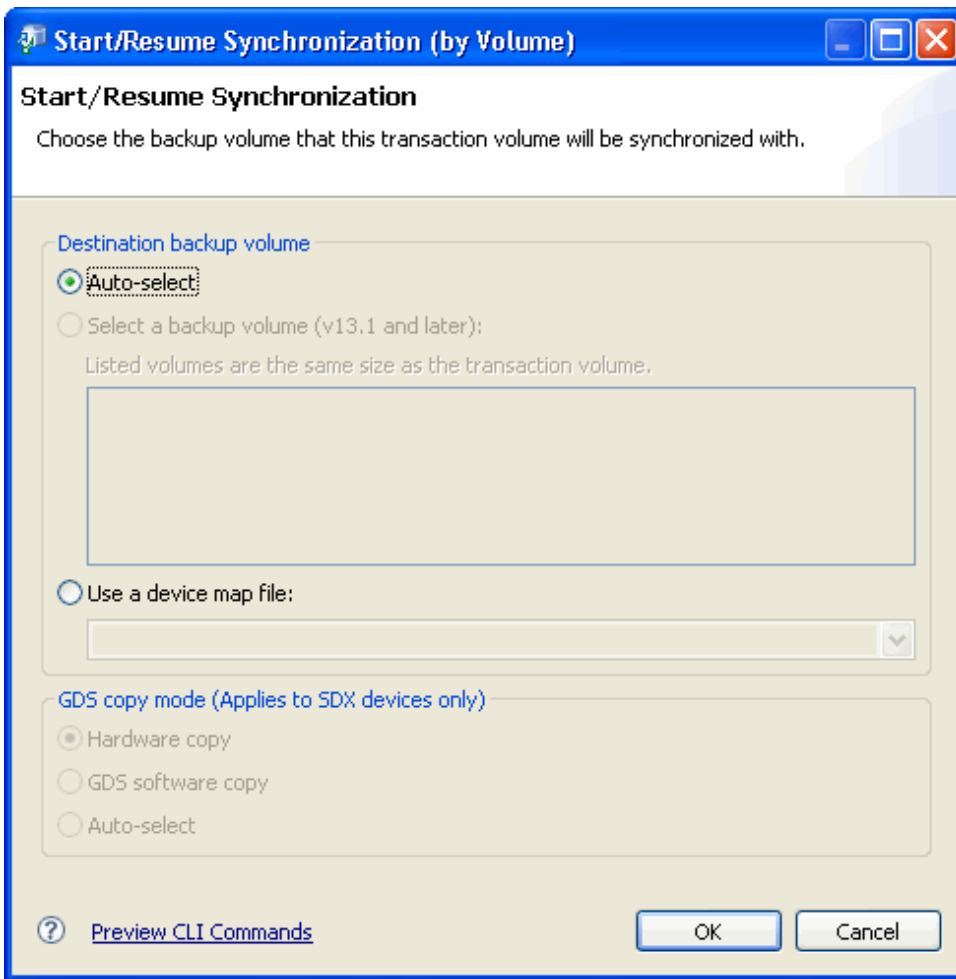
3.6.1 Starting and Resuming Synchronization

Perform the synchronization of the transaction and backup volumes using the following procedure:

1. Select the required transaction volume from the Site view and right-click it to invoke the backup context menu.



2. Select [Start/Resume Synchronization] from the context menu to invoke the [Start/Resume Synchronization] dialog box.



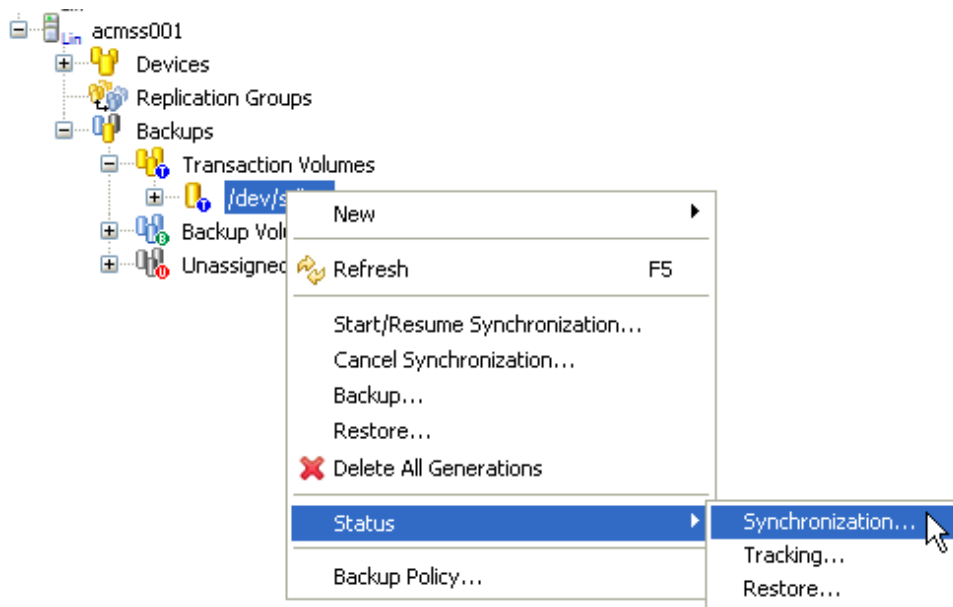
3. Select the method of performing the backup in the [Destination backup volume] group box.
 - Select [Auto-select] to have AdvancedCopy Manager automatically select a backup volume.
 - Select [Select a backup volume (v13.1 and later)] to choose a backup volume from the list.
 - Select [Use a device map file:] to specify a device map file which defines the associated backup volumes.
4. Click [OK] to start the synchronization.
5. The current copy status is not refreshed automatically. Right-click on the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

3.6.2 Check the Status of Synchronization

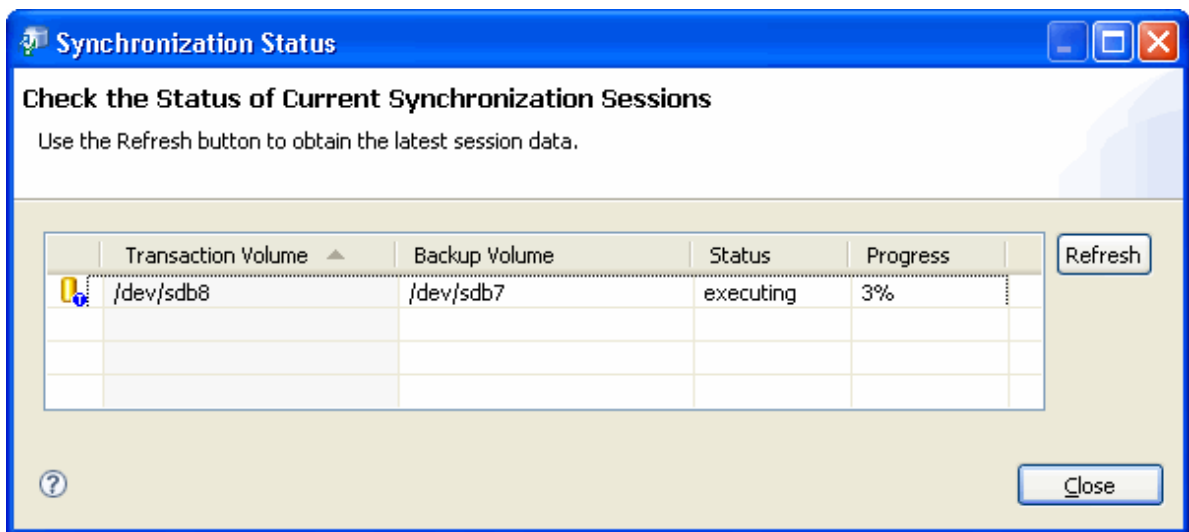
Check the status of synchronization as follows.

1. Select the required transaction volume from the Site view and right-click it to invoke the context menu.

2. Select the [Status] item from the context menu and then select the [Synchronization] item in the submenu to invoke the [Synchronization Status] dialog box.



3. Select the [Status] from the context menu to display the submenu. Click [Synchronization] to display the [Synchronization Status] dialog box.



4. Click [Refresh] to refresh the status information.

Table 3.2 Click [Close] to close the [Synchronization Status] dialog box.

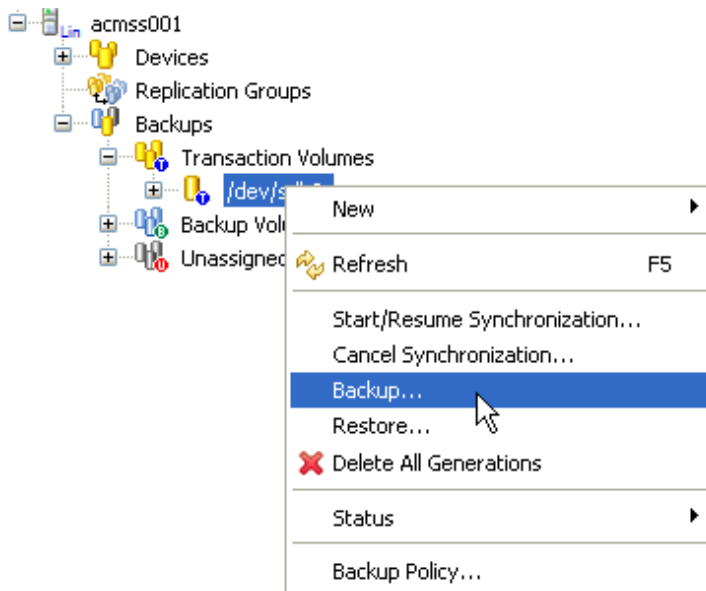
Label	Description
Transaction Volume	Displays a transaction volume name.
Backup Volume	Displays a backup volume name. "----" is displayed when there is no backup synchronization in progress.
Status	Displays the execution status. <ul style="list-style-type: none"> - "----" : There is no backup synchronization in progress. - "executing" : Synchronization is in progress, and the status is pre-equivalency maintenance. - "equivalent" : There is an equivalency maintenance status. - "suspend" : The EC or the GDS software copy has been suspended.

Label	Description
	<ul style="list-style-type: none"> - "failed" : Backup synchronization has terminated abnormally. - "nosession" : The session does not exist (the resource information does not match). - "halt" : The backup synchronization has been halted. - "gds-error" : Copying with GDS has terminated abnormally.
Progress	Displays the EC or GDS software copy execution status as a percentage (%). "----" is displayed when the copy is suspended, and during backup synchronization.

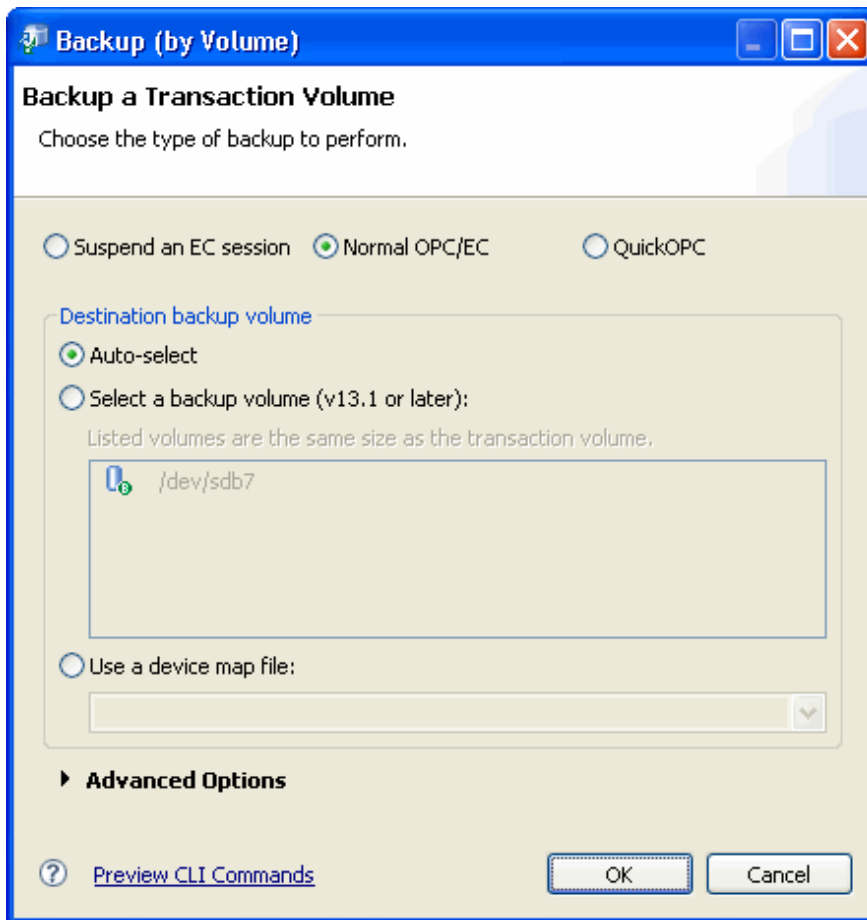
3.6.3 Backup (Stop EC/Suspend EC)

The following procedure will create a backup:

1. Ensure Equivalency Maintenance Status has been attained by selecting the relevant Transaction Volumes node from the Site view to refresh the Details view with status information.
2. Select the transaction volume for which you wish create a backup from the Site view and right-click the [Backup] option in the context menu to invoke the [Backup] dialog box.



3. Select [Suspend an EC session] to create a backup by suspending EC or select [Normal OPC/EC] to create a backup by stopping the equivalence copy. .



4. Click [OK] to continue.
5. Select the transaction volume again from the Site view to refresh the Details view with current status information, in order to ensure that the backup has been created successfully, with history.

- The current copy status is not refreshed automatically. Right-click on the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

Transaction Volume Summary

Device name: [/dev/sdb8](#)
Volume name: /dev/sdb8
Mount point: ----
Volume Size (MB): 1913.96 [2006935552 bytes]
Generations to keep: 1
Suggested backup frequency (days): 30
Current status: ----
Time when last backup started (local time on Storage Server): 3/06/2009 13:38
Days overdue for backup: None

Tasks

[Start or Resume a synchronization session](#) [Restore the most recent Backup Generation](#)
[Cancel a running synchronization session](#) [Delete all Generations for this Transaction Volume](#)
[Backup this Transaction Volume](#) [Check the status of current Synchronization sessions](#)
[Check the status of current QuickOPC Tracking sessions](#) [Check the status of current Restore sessions](#)
[Set the Backup Policy for this Transaction Volume](#)

Backup Generations

This section lists the backup generations belonging to this server. For more details double-click a table row.

	Abs. Generation ▲	Rel. Generation	Backup Date	Backup Volume	Status	Progress	ArcSerial
	1	1	03/06/2009 1:38 PM	/dev/sdb6	succeeded	----	n/a

Overview

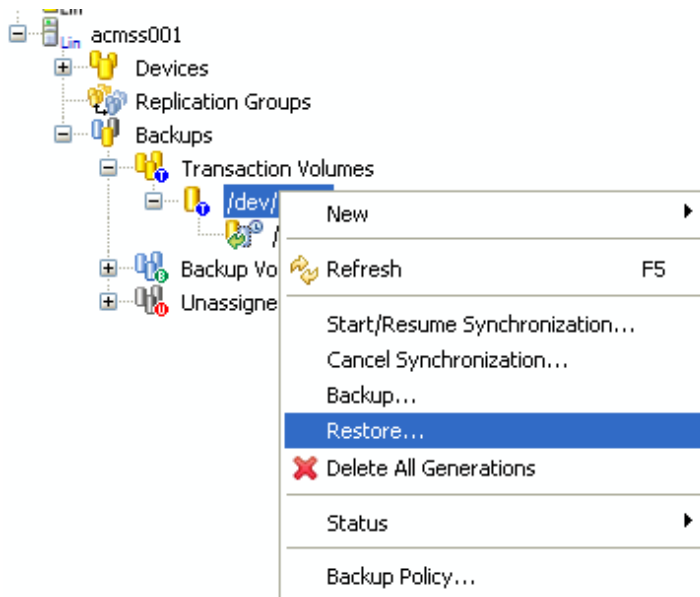
3.6.4 Restore

Perform restoration from an EC backup volume as follows:

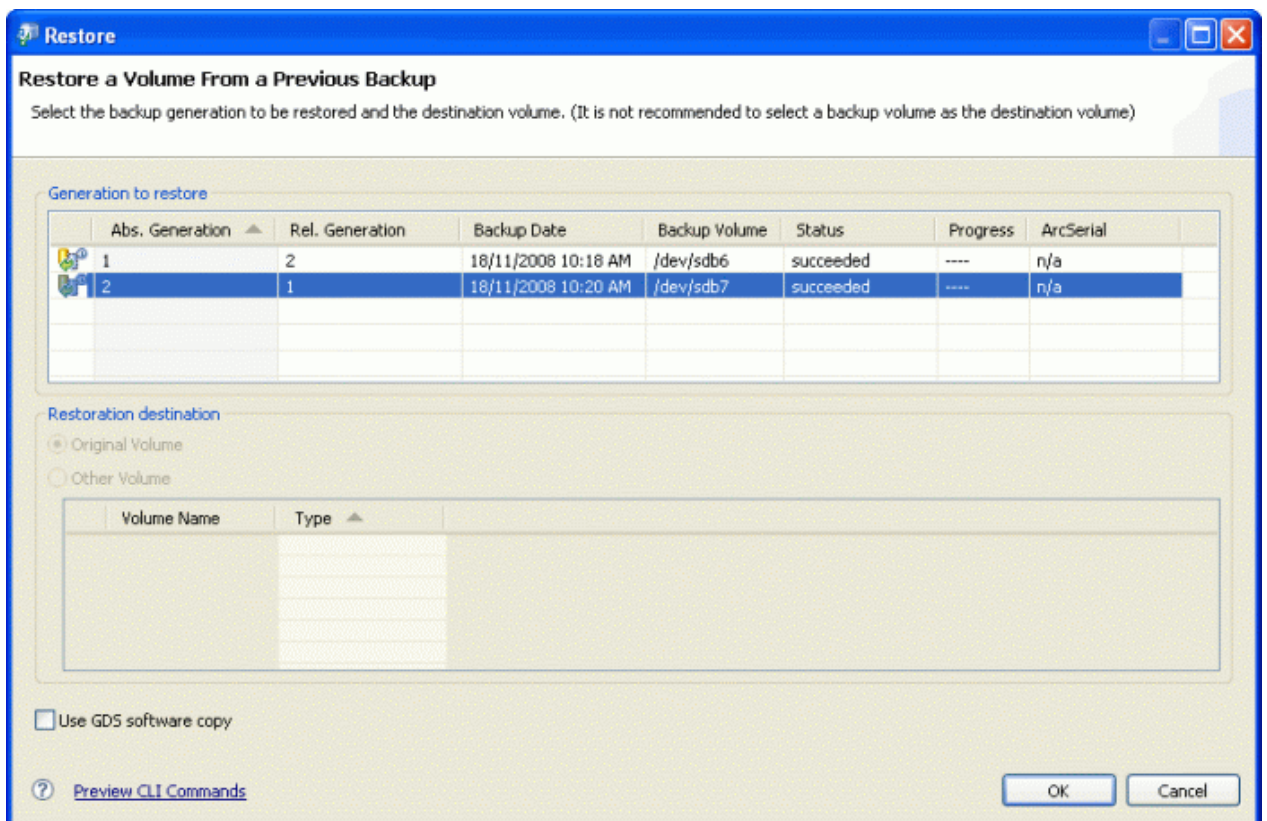
- Check Status of any Equivalent Copy (EC) sessions

Check the status of Equivalent Copy synchronization sessions for the transaction volume. Ensure all the synchronization sessions have been stopped. For details, refer to "3.6.5 Cancel Synchronization".

2. Select the transaction volume from the Site view and right-click it to invoke the backup context menu.



3. Select [Restore] to invoke the [Restore] dialog box.



4. The most recent backup volume will always be highlighted in the Generation to restore form when the [Restore] dialog box displays. Select a different generation if you wish to restore from another backup generation.
5. If you wish to restore to an alternative destination volume, select [Other Volume] in the Restoration destination form and choose a device.
6. Click [OK] to continue with the restore.

- The current copy status is not refreshed automatically. Right-click on the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

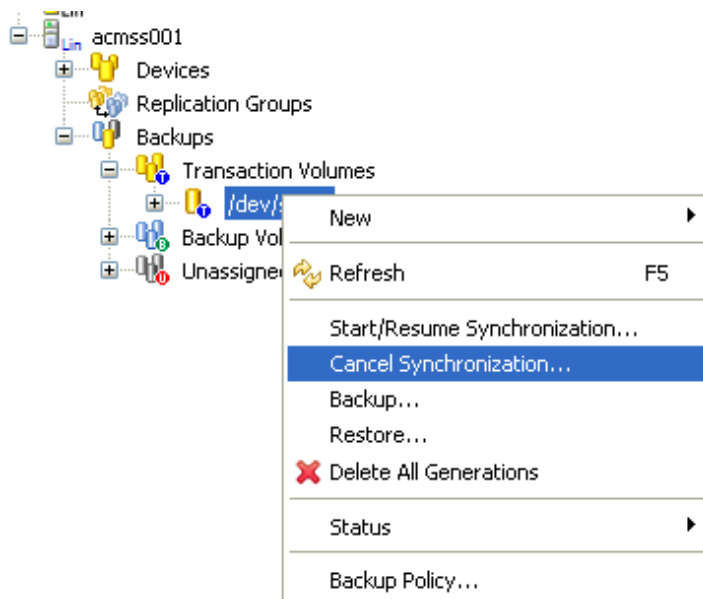
Point

The [Use GDS software copy] check box is only applicable when the transaction volume is GDS logical volume.

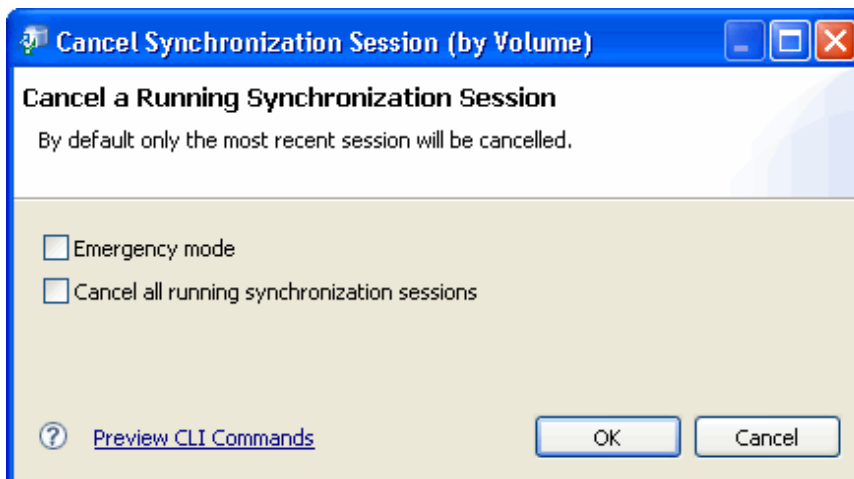
3.6.5 Cancel Synchronization

Use the following process to cancel synchronization:

- Select the backup volume with the Equivalent Copy session you wish to cancel, and right-click the backup volume to invoke the backup context menu



- Select the [Cancel Synchronization] option to invoke the [Cancel Synchronization Session] dialog box.



- Enable the [Emergency mode] option **only** if it is necessary.
For details on the emergency mode, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Backup Management Commands" > "Operation commands", sub-sections "swsthistdel (History information deletion command)" and "swstcancelsync (Backup synchronous processing cancel command)".
- Enable the [Cancel all running synchronization sessions] check box **only** if you wish to cancel all synchronization sessions associated with this transaction volume.

5. Click [OK] to perform the cancellation.

3.7 Manage Backup History

This section describes how to display or delete backup history.

3.7.1 Display Backup Policy and History

Backup history for a specific transaction volume can be viewed in the transaction volume form when you view all devices, or only the transaction volumes for a specific Storage Server.

1. Select the required transaction volume under the [Backups] node for a Storage Server in the Site view.
2. The Details view will be refreshed with summary information relating to the selected transaction volume displayed in three separate forms.

The Transaction Volume Summary form will show summary information relating to the transaction volume including the number of backup generations and suggested backup frequency.

Transaction Volume Summary

Device name: [/dev/sdb8](#)

Volume name: /dev/sdb8

Mount point: ---

Volume Size (MB): 1913.96 [2006935552 bytes]

Generations to keep: 1

Suggested backup frequency (days): 30

Current status: snapshot(2%)

Time when last backup started (local time on Storage Server): 1/06/2009 11:27

Days overdue for backup: None

The Backup Generations form is a summary of each backup generation associated with the backup policy for the selected transaction volume.

Backup Generations

This section lists the backup generations belonging to this server. For more details double-click a table row.

	Abs. Generation ▲	Rel. Generation	Backup Date	Backup Volume	Status	Progress	ArcSerial
	1	1	Nov 13, 2008 10:46...	/dev/sdb6	succeeded	----	n/a

The following information is shown in the Backup Generations form:

Label	Description
Abs. Generation	Displays the absolute generation number. If the generation number for the data that was first backed up is 1, the generation number for the new data will be 2.
Rel. Generation	Displays the relative generation. Whenever data is backed up, the generation number for the data that was first backed up is reassigned, so the generation number for the new data will always be 1.

Label	Description
Backup Date	Date and time last backup started
Backup Volume	Backup volume
Status	Displays the backup data copy status. Valid values are: "succeed", "executing (%)", "failed", "halt", "gds-error".
Progress	Copy progress
ArcSerial	Not used for the English version

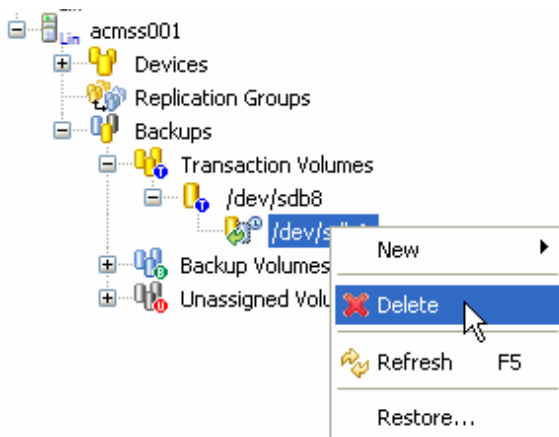
3.7.2 Delete Backup History

This section describes how to delete backup history.

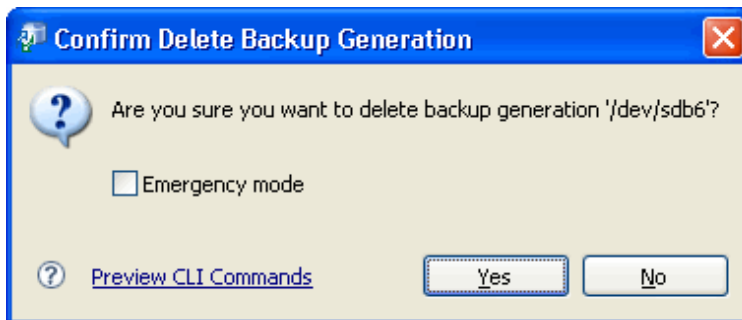
3.7.2.1 Delete a Backup Generation

The user must have at least execution access for backup to delete a backup generation.

1. Select one or more backup generation objects from the Site view and right-click it to invoke the context menu.



2. Select the [Delete] item from the context menu to invoke the [Confirm Delete Backup Generation] dialog box.



3. Enable the [Emergency mode] option, if appropriate.

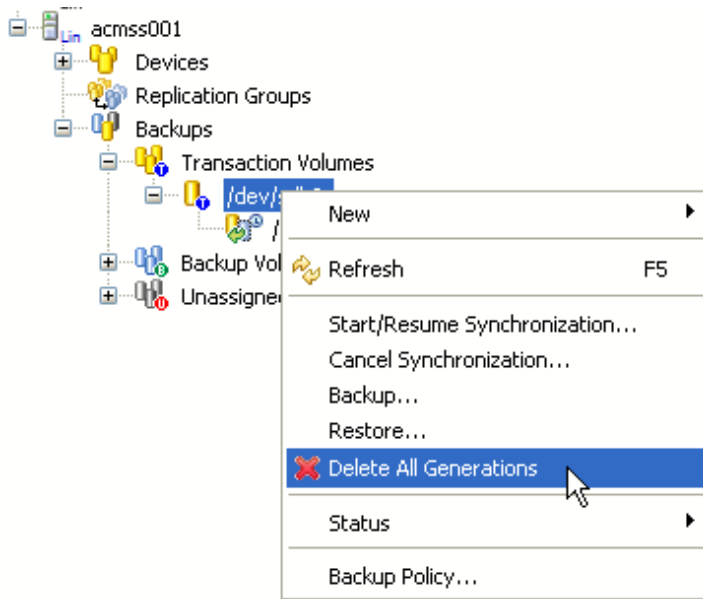
For details on the emergency mode, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Backup Management Commands" > "Operation commands", sub-sections "swsthistdel (History information deletion command)" and "swstcancelsync (Backup synchronous processing cancel command)"

4. Click [Yes] to delete the selected backup history.

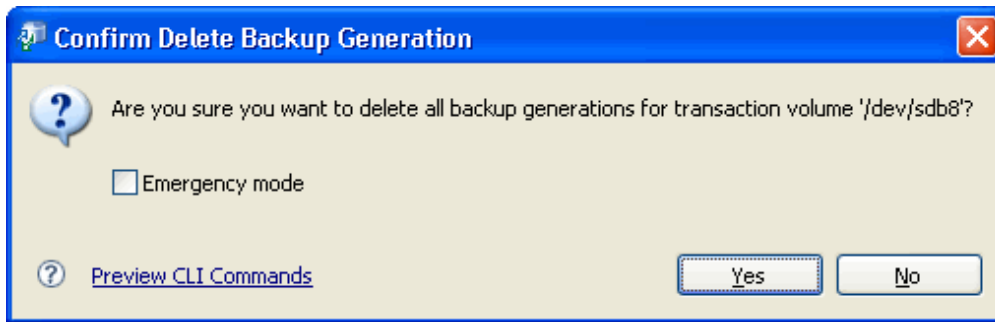
3.7.2.2 Delete All Generations for a Transaction Volume

The user must have at least execution access for backup to delete a backup generation.

1. Select a transaction volume from the Site view and right-click it to invoke the context menu.



2. Select the [Delete All Generations] option to invoke the [Confirm Delete Backup Generation] dialog box.



3. Enable the [Emergency mode] option if appropriate.

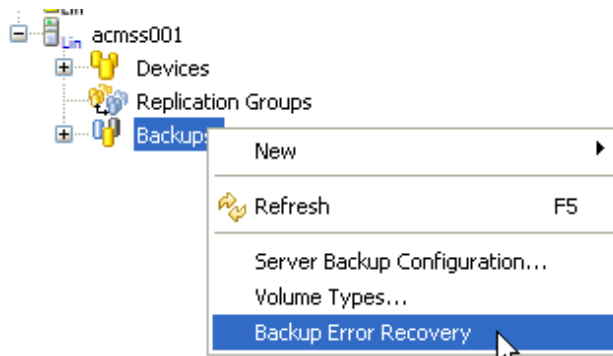
For details on the emergency mode, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Backup Management Commands" > "Operation commands", sub-sections "swsthistdel (History information deletion command)" and "swstcancelsync (Backup synchronous processing cancel command)"

4. Click [Yes] to delete the selected backup history.

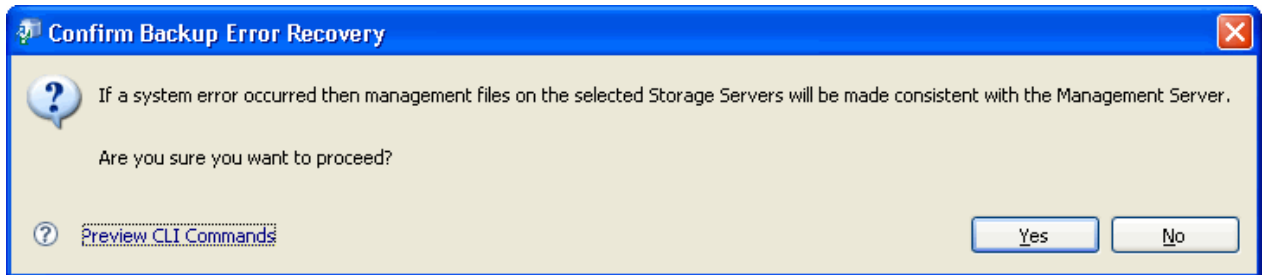
3.8 Backup Error Recovery

This function allows the user to recover backup management files after errors (i.e. caused by a system failure whilst a backup is being performed) by ensuring that the Storage Management Server repository information is consistent with the backup management files located on a Storage Server.

1. Select one or more Storage Server Backup Groups nodes from the Site view and right-click them to invoke the context menu.



2. Select the [Backup Error Recovery] option to invoke the [Confirm Backup Error Recovery] dialog box.



3. Clicking [Yes] attempts to perform backup error recovery for the selected servers and then closes the dialog box.

Chapter 4 Replication

This chapter describes how to use the replication function using the GUI client.

For details on the replication function, refer to the "AdvancedCopy Manager Operator's Guide", section "Replication".

For details on the settings required for the replication function, refer to "[Chapter 2 Maintenance and Configuration](#)".

4.1 Configure a Replication Group

Replication can be performed either using a Volume Pair or by configuring a Replication Group. The [New Replication Group] dialog box is used to create and manage both Volume Pairs and Replication Groups in the AdvancedCopy Manager GUI Client.

4.1.1 Requirements for Replication Groups

Replication volumes that configure a Replication Group must satisfy certain conditions. For details, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Command" > "Environment definition commands" > "swsrpsetvol (Replication volume information deletion command)".

4.1.2 Create a Replication Group

Replication Groups can be created for ease of replication management with one or more source/destination device pairs belonging to any single group.

It is also possible to create Volume Pairs that do not belong to a Replication Group.

Replication Groups are created by using the following steps:

1. Right-click anywhere in the Site view to invoke the context menu.
2. Select the [New] > [Replication Group] option to invoke the [New Replication Group] wizard dialog box.

Enter settings in accordance with the displayed contents.

The screenshot shows the 'New Replication Group' dialog box. The title bar reads 'New Replication Group'. The main heading is 'Choose a Name for the Group and the Source/Destination Storage Servers'. Below this, a note states: 'Replication can take place between two servers. Commands can be issued to one or both servers.' The 'Group name:' field is empty. A note below it says: 'Volume pairs do not have to belong to a group. Click here [] if you do not wish to create a group.' The 'Enable bidirectional copying between the volumes in this group' checkbox is checked. The 'Source server:' dropdown menu is set to 'acmss001'. The 'Create replicas on a different server?' checkbox is unchecked. The 'Destination server:' and 'Operation server:' dropdown menus are empty. A link at the bottom left says: 'Add a New Storage Server to the Site. Use this option if a server does not appear in the drop down lists above.' The footer contains a help icon, 'Preview CLI Commands', and buttons for '< Back', 'Next >', 'Finish', and 'Cancel'.

Table 4.1 New Replication Group - Choose Names dialog box fields

Label	Description
Group name:	Mandatory field for the group name only if it is other than a Volume Pair.
Click here if you do not wish to create a group.	Enable this checkbox if you do not wish to create a group. Volume Pairs do not have to belong to a Replication group.
Enable bidirectional copying between the volumes in this group	Enable bidirectional copying between the devices in this group
Source server:	Can be any server in the site
Create replicas on a different server?	Enable this field only if the destination is on a different server. If the site has only one server, then this field is disabled.
Destination server:	Shows all servers at the site except the current source server. If the source is changed, this list will be updated. This field is only enabled if the [Create replicas on a different server?] checkbox is enabled.
Operation server:	The argument values are as follows: "Source", "Destination", "Both". "Both" is the default value. Only enabled when the source and destination servers are different and the [Create replicas on a different server?] checkbox is enabled.
Add a New Storage Server to the Site. Use this option if a server does not appear in the drop down lists above.	This link opens the [New Storage Server] dialog box to add more servers to the site if necessary. If a server is added, the combo box values are automatically updated.

3. Select a source server from the Source server combo box.

If the replica is hosted on a different Storage Server, enable the checkbox [Create replica on a different server?]. Specify the destination server and operation server accordingly.

Click [Next] to display the New Replication Group dialog box. Create a Volume Pair by specifying the source and destination servers.



When creating a new Replication Group, do not select a device already registered as a backup volume.

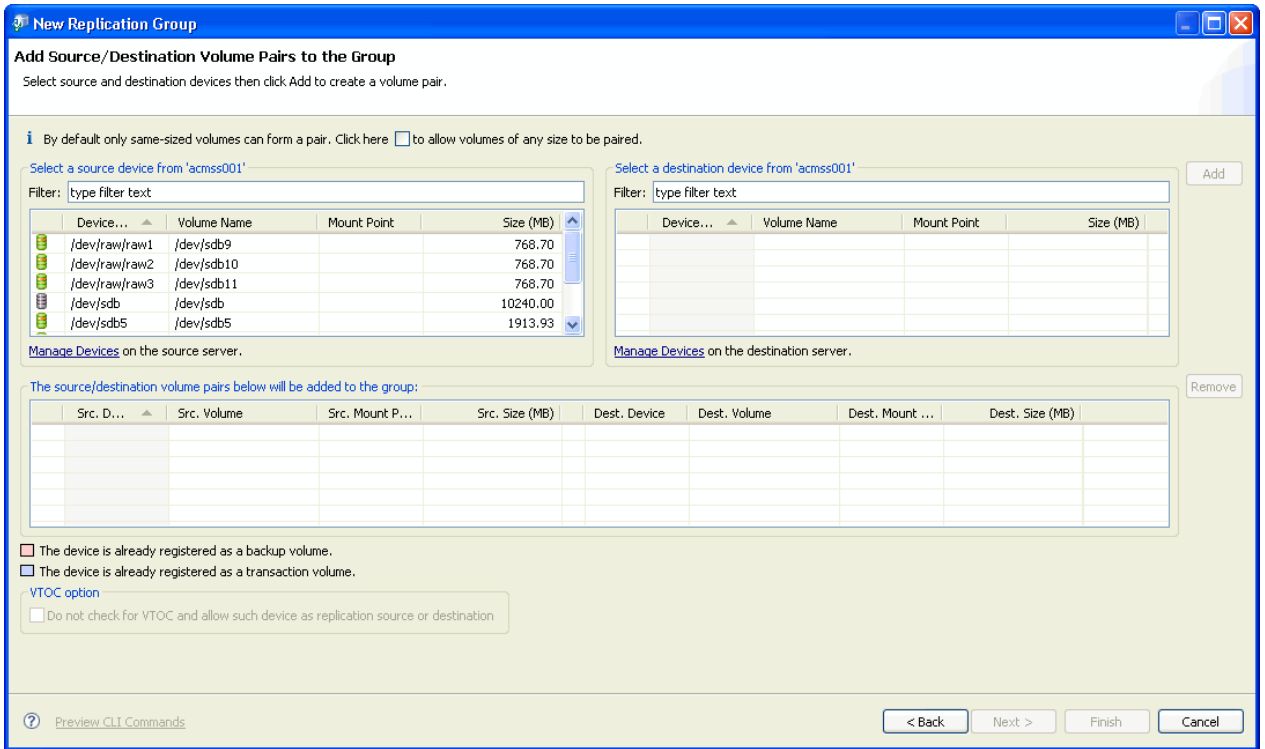
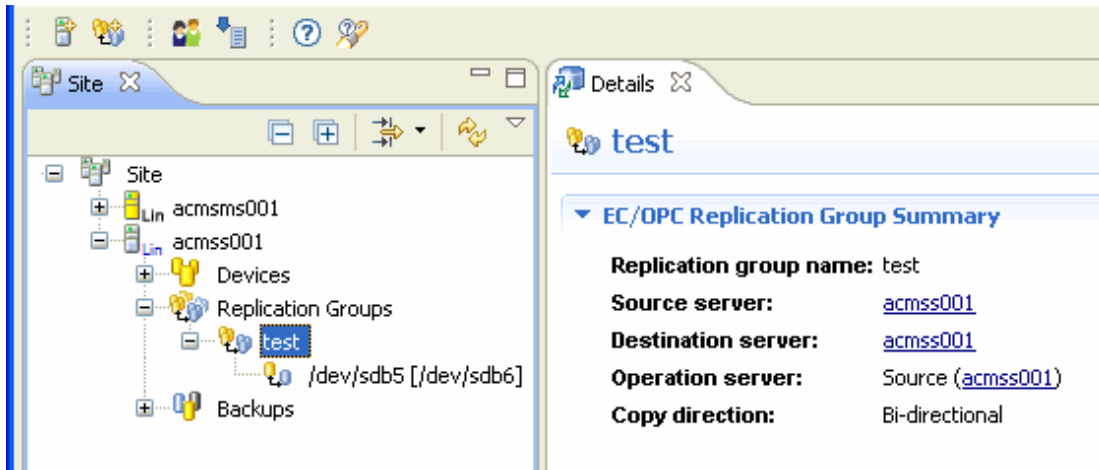


Table 4.2 New Replication Group - Add Volume Pairs dialog box fields

Label	Description
By default only same-sized devices can form a pair. Click here to allow volumes of any size to be paired.	Enable the checkbox only to allow devices of any size to be paired. When unchecked, the destination server devices table displays only compatible devices. When checked, any size devices can be paired
Select a source device from 'server_name1':	Lists all devices on the source server that have not yet been assigned as the source device of a pair in this group only.
Select a destination device from 'server_name2':	Lists all devices on the destination server that have not been assigned yet as the destination device of a pair in this group only.
Manage Devices on the source server. Manage Devices on the destination server.	Click one of these links to open the [Manage Devices] wizard for the server. If any devices are added, the source list is automatically updated.
Allow volume with VTOC as replication source or destination	This option is only enabled when one of the devices is a slice in a Solaris operating platform and allows the volume with VTOC to be the replication source or destination.

4. Specify a filter string to limit the range of devices available for selection.
Similarly, a list of available destination server devices with compatible attributes is displayed to the right of the source list.
5. Select a destination volume and click [Add] to add the Paired Volume to the group.
6. If more than one Volume Pair is to be added to the group, repeat the previous two steps as required. Click [Finish] to complete the creation of the Replication Group.

7. Check the details of the new Replication Group or Volume Pair by selecting it from the Site view to refresh the Details view with summary information.



4.1.3 Modify Replication Group Information

Only information relating to the source or destination volume pairs in a Replication Group can be changed without removing and re-creating the entire Replication Group.

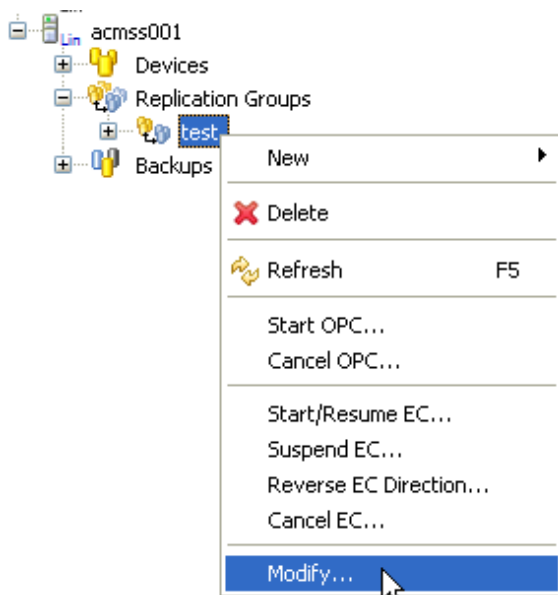
This can be performed using the [Modify a Replication Group] function through the AdvancedCopy Manager GUI Client.

If any other attributes or parameters for the group need to be changed, the Replication Group must be deleted and re-created with new values for all pairs in the group:

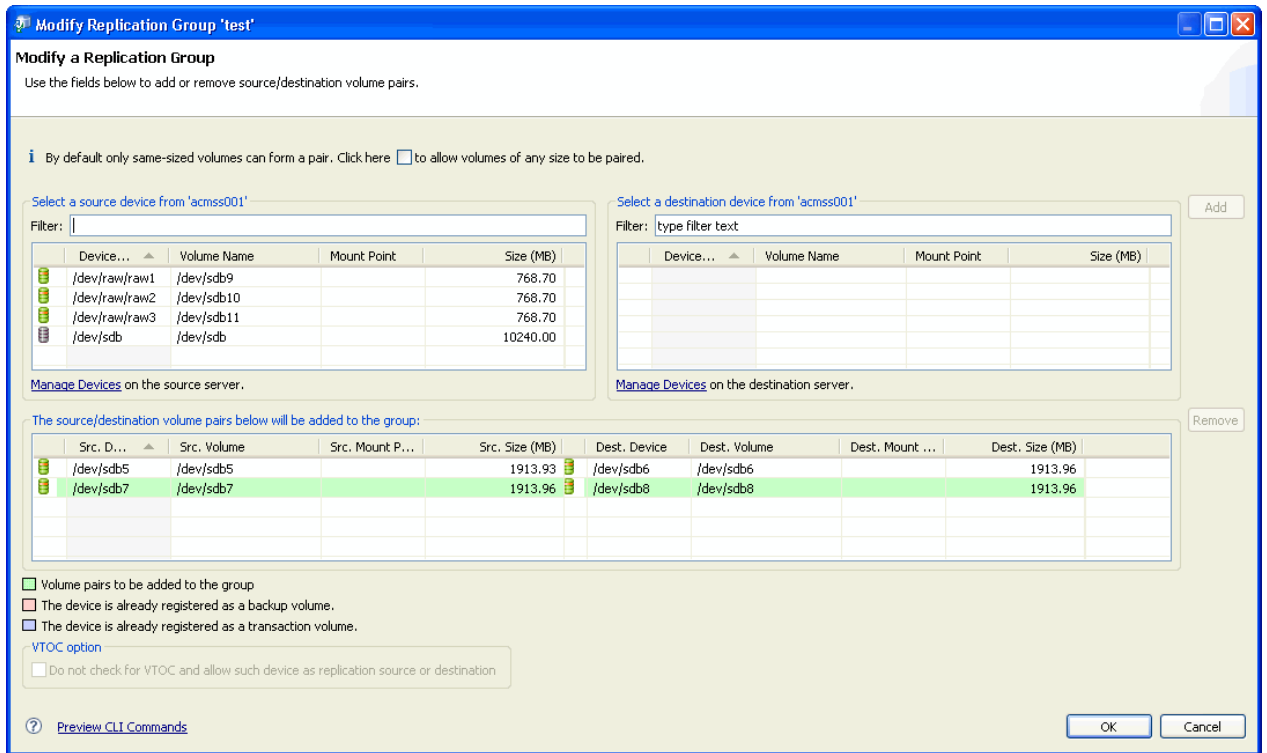
- Group name
- Source and destination server
- Volume Pairs
- Copy direction
- Operation server

For details on how to re-create a Replication Group, refer to "4.1.2 Create a Replication Group".

1. In the Site view, right-click on any existing Replication Group to invoke the context menu item.



- Select the [Modify] option to invoke the [Modify Replication Group 'group_name'] dialog box.
Only Volume Pairs can be added or removed using the [Modify Replication Groups] feature.
Volume Pairs added to the group are also added to the [Volume Pair] list box and highlighted.

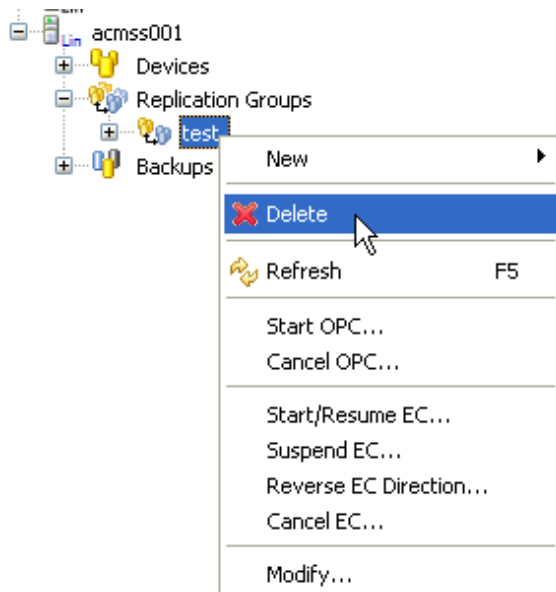


- Confirm that the details are correct, and then click [OK] to exit the dialog box.

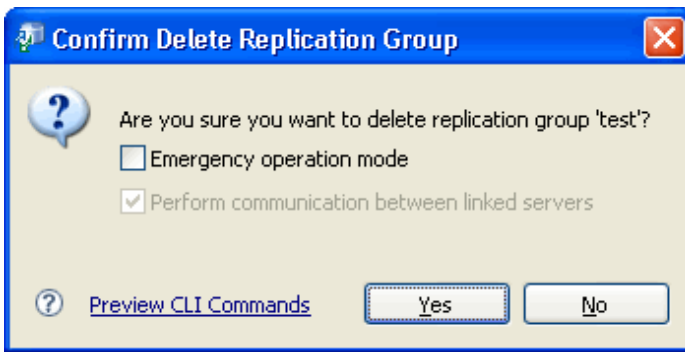
4.1.4 Delete a Replication Group

Follow this procedure to delete a replication group.

- Right-click on the Replication Group in the Site view to invoke the context menu.



2. Select the [Delete] option to invoke the [Confirm Delete Replication Group] dialog box.



The confirmation dialog box includes two options.

- If the Replication Group or Volume Pair does not share the same source server, the [Perform communication between linked servers] option will be checked by default.
- If there has been a communications error during a previous replication which requires the relationship between the source and destination servers to be cleared at both ends, the [Emergency operation mode] option should be checked.

For details on the emergency mode, refer to the " AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Command" > "Environment definition commands" > "swsrpdelvol (Replication volume information deletion command)".

3. Click [OK] to continue with deletion of the Replication Group or the Volume Pair, and close the dialog box.

4.2 View Summary Information for Replication

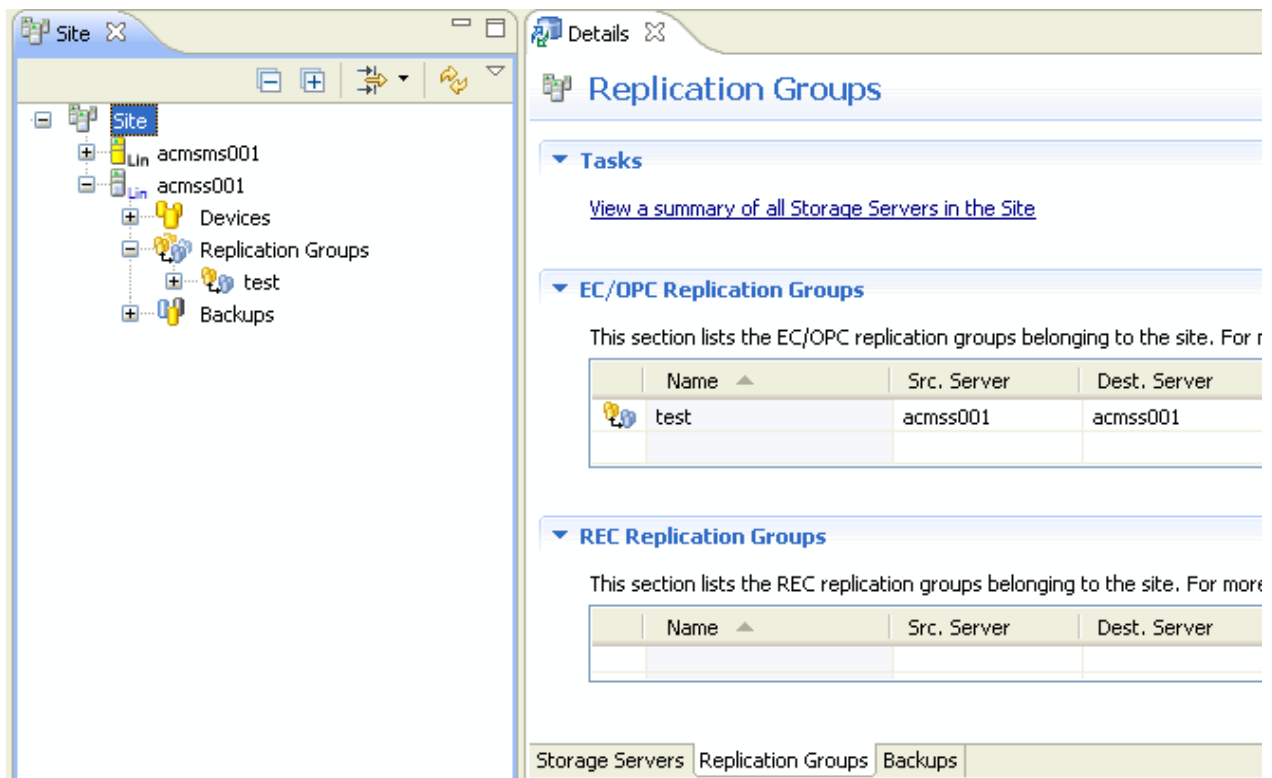
4.2.1 View Summary of All Replication Groups at the Site

A Site view will show all replication groups for the site in a single tabbed view.

To invoke a Site view, the user should perform the following procedure:

1. Click on the [Site] root node of the Site view tree to populate the perspective with high level information relating to the site in the Details view.
2. Click the [Replication Group] tab at the bottom of the Details view to display the followings:
 - Task pane
 - Form
 - EC/OPC Replication Group

- REC Replication Group



EC/OPC Replication Group and REC Replication Group

The information displayed in the view is described in the table below:

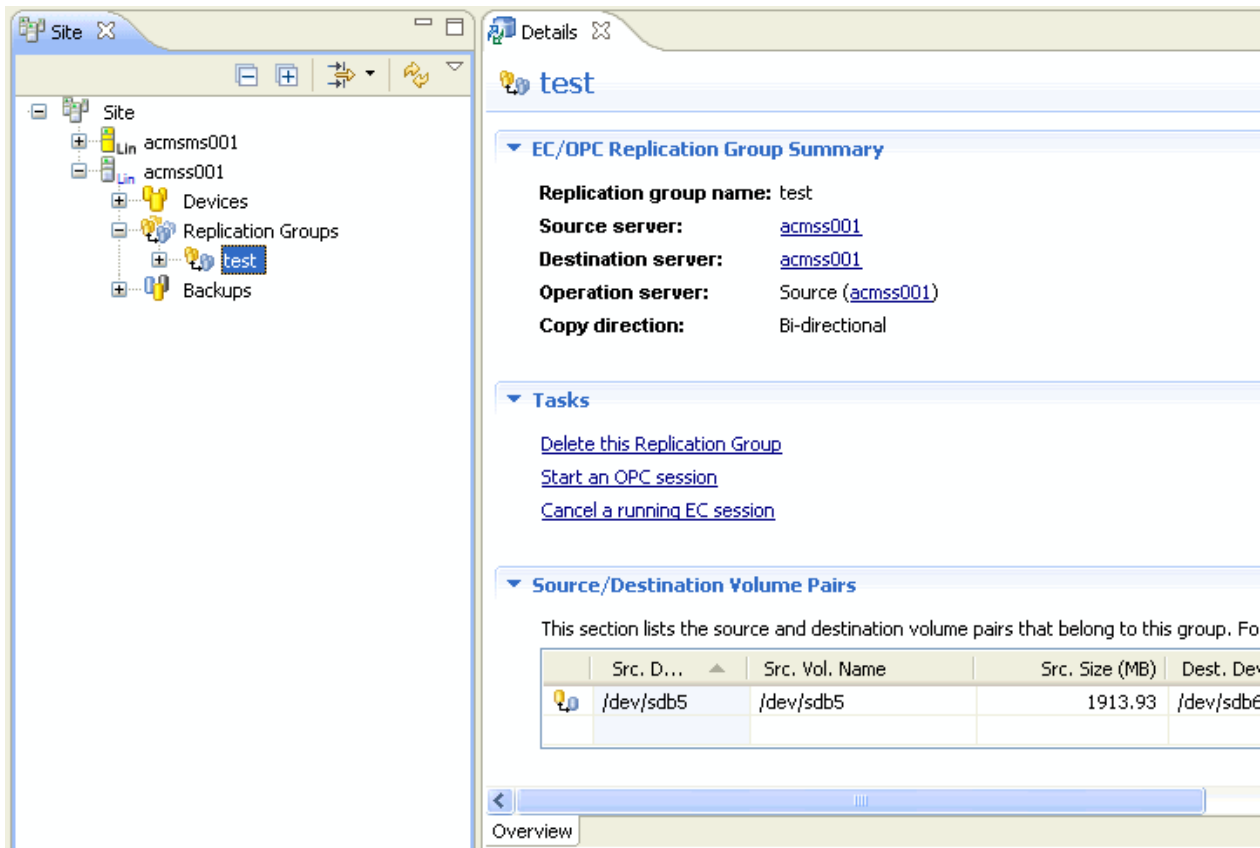
Label	Description
Name	Name of the group/pair (Source volume[Destination volume])
Source server	Replication source server name. (Shown as link to Details page of the server.)
Destination server	Replication destination server name. (Shown as link to Details page of the server.)
Operation server	The operation server.
Copy direction	Direction in which copying will be performed

4.2.2 View Summary for Replication Groups

The Details view shows the following information.

- Replication Group Summary
- Task pane
- Source/Destination Volume Pairs

Select a Replication Group from the Site view to display the Replication Group summary.



EC/OPC Replication Group Summary

A summary of EC/OPC Replication Groups is displayed.

The information displayed in the view is described in the table below:

Label	Description
Replication Group Name	One of the following is displayed: <ul style="list-style-type: none"> - Replication Group name - Volume Pair name (replication source volume name[replication destination volume name])
Source server	Name of the server that manages the replication source volume. It is shown as a Hyperlink to the detail page for host server.
Destination server	Name of the server that manages the replication destination volume. It is shown as a Hyperlink to the detail page for host server.
Operation server	The operation server. Where the Op server info is shown, the host server is shown as Hyperlink to detail page.
Copy direction	Direction in which copying will be performed

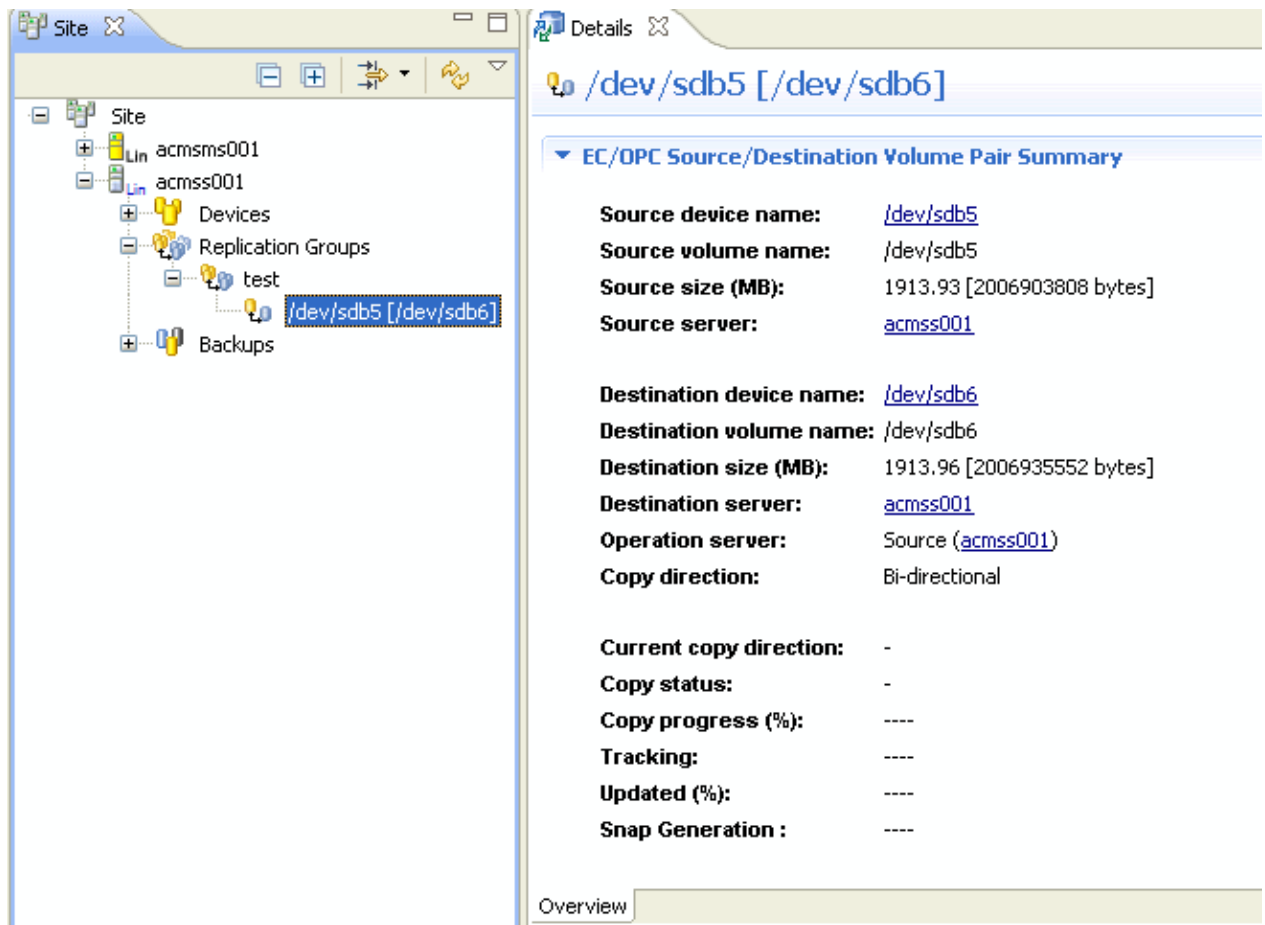
4.2.3 View Summary for Volume Pairs

Select the Volume Pair object under a Replication Group node from the Site view to display a Volume Pair summary.

The detail view shows the following information.

- EC/OPC Source/Destination Volume Pair Summary
- Tasks

- Destination Volumes sharing the Same Source Volume



EC/OPC Source/Destination Volume Pair Summary

The following information is provided in the Volume Pair summary view:

Label	Description
Source device name:	System-defined device name
Source volume name:	Source volume name
Source size (MB):	Source volume size Displays the size of the area that is actually used for copying if it is a VxVM logical volume
Source server:	Name of the server that manages the replication source volume. It is shown as a hyperlink to the detail page for the host server.
Destination device name:	System defined device name
Destination volume name:	Destination volume name
Destination size (MB):	Destination volume size Displays the size of the area that is actually used for copying if it is a VxVM logical volume
Destination server:	Server hosting the destination volume if different to the source server
Operation server:	The server from which the replication volume (pair) operation is invoked. - Replication source : Operation server is the replication source server.

Label	Description
	<ul style="list-style-type: none"> - Replication destination : Operation server is the replication destination server. - Both : Destination and source servers are the operation server.
Copy direction:	Configured copy direction (single direction or both) <ul style="list-style-type: none"> - Single direction : Can copy in one direction only from the replication source to the replication destination - Both : Can copy in either direction
Current copy direction:	Current copy direction while copy is in progress <ul style="list-style-type: none"> - Regular : Copying is in progress from the replication source to the replication destination - Reverse : Copying is in progress from the replication destination to the replication source - ---- : Has not been replicated
Copy status:	Indicates copy status while copy is in progress <ul style="list-style-type: none"> - ---- : Has not been replicated - Synchronous : Complete copying or differential copying is in progress - Equivalent : Equivalency maintenance state has been attained. - Replicated : Replication has been established. - copy-on-write : SnapOPC is in progress. - copy-on-write(active) : SnapOPC+ is in progress (latest Snap generation). - copy-on-write(inactive) : SnapOPC+ is in progress (previous Snap generation). - Failed : In the error-suspend status - Halt : In the hard-suspend status - Snapshot : Snapshot is in progress - ????? : Failed to obtain the copying status - gds-error : Copying by GDS has ended abnormally.
Copy progress (%) :	Displays the copy progress in a percentage (%). If replication has not been executed or SnapOPC is in progress, displays "----".
Tracking:	Displays whether the tracking processing is performed. <ul style="list-style-type: none"> - On : Tracking processing is running. - Off : Tracking processing is not running - ---- : Snapshot processing is not running
Updated (%) :	When either of the following items applies, displays as a percentage the amount of data updated after the previous replica creation <ul style="list-style-type: none"> - When the status column displays "----" and the trk column displays "on" (in other words, the operation is being tracked but physical copying is not being performed) - When the status column displays "copy-on-write" (in other words, SnapOPC is being performed) When none of the above item applies, displays "----". Always displays "----" when the operation is linked to GDS Snapshot.
Snap Generation:	For SnapOPC+, displays the Snap generation number

Label	Description
	For non-SnapOPC+, displays "----" The oldest snap generation number is 1. The bigger the number is, the later the generation will be.
If Remote Equivalent Copy is in progress, the following additional information is displayed	
Transfer mode:	Denotes REC transfer mode Displays the transfer mode of the device-to-device synchronous processing <ul style="list-style-type: none"> - Synchronous : Synchronous mode - Asynchronous : Asynchronous mode - Stack : Stack mode - Consistency : Consistency mode - ---- : Synchronous replication between devices (REC) is not being performed
Recovery mode:	Denotes Recovery mode for REC. Displays the Recovery mode of the device-to-device synchronous processing <ul style="list-style-type: none"> - Automatic : Automatic Recovery mode - Manual : Manual Recovery mode - ---- : Synchronous replication between devices (REC) is not being performed
Split mode:	Denotes Split mode for REC Displays the Split mode of the device-to-device synchronous processing <ul style="list-style-type: none"> - Automatic : Automatic Split mode - Manual : Manual Split mode - ---- : Synchronous replication between devices (REC) is not being performed

Destination Volumes with the Same Source Volume

An additional form in the details view will display the [Destination Volumes with the Same Source Volume] form containing details of all other Volume Pairs in the site where the source volume is the same (a volume can be replicated to multiple destination volumes, but not vice-versa).

The table below describes the range of information displayed in this section.

Label	Description
Device Name	Replication destination device name
Volume Name	Replication destination volume name
Size	Volume size
Server	Destination server
Replication Group	Replication Group name. "-" if it is not part of a group

4.3 Perform Replication

Before performing replication, the replication environment must be set up in accordance with information provided in the AdvancedCopy Manager Operator's Guide.

4.3.1 Snapshot Replication

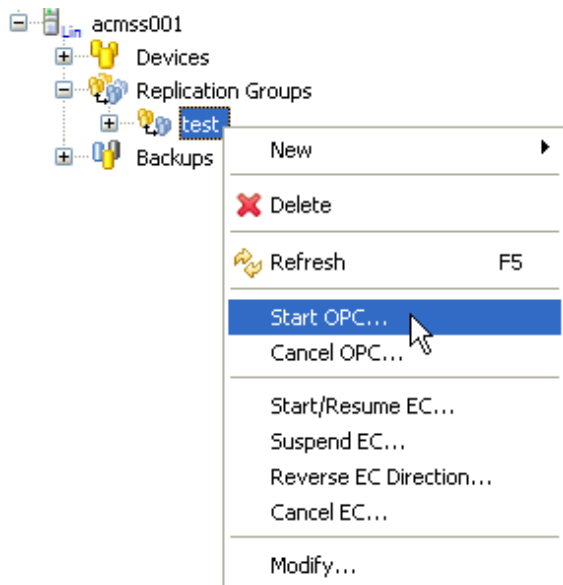
Snapshot replication refers to replications that use the One Point Copy (OPC) function of ETERNUS disk storage systems. This section describes the procedures for performing OPC, QuickOPC and SnapOPC using the AdvancedCopy Manager GUI Client.

For details of each copy type, refer to the "AdvancedCopy Manager Overview" and "AdvancedCopy Manager Operator's Guide".

Replication can be performed by volume or by group

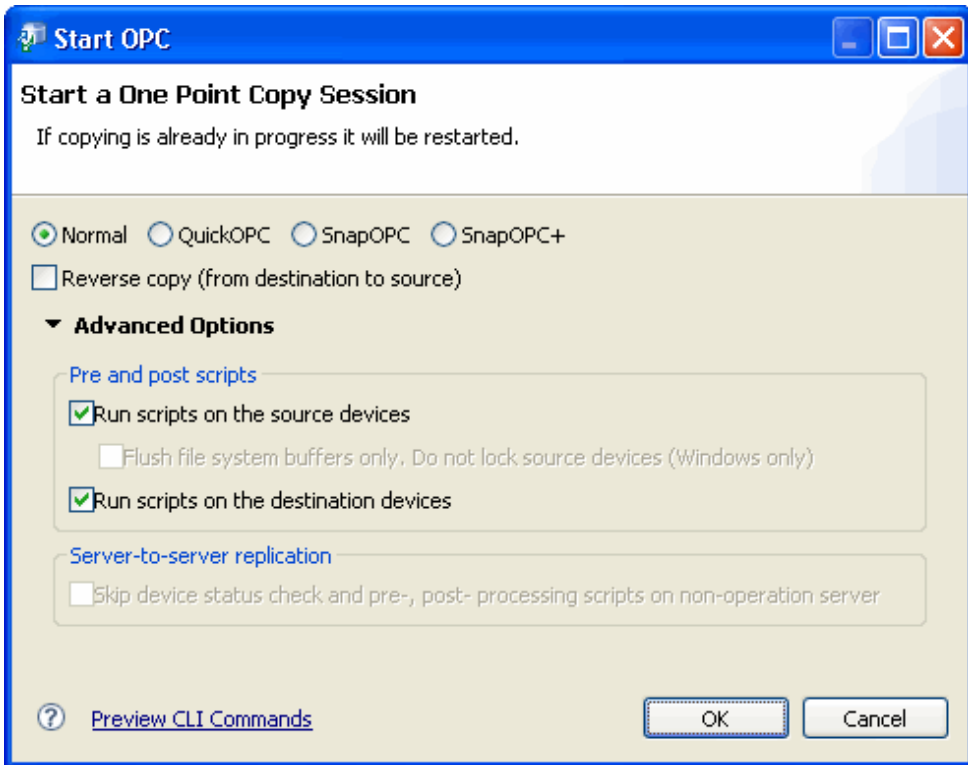
4.3.1.1 Start OPC / QuickOPC / SnapOPC / SnapOPC+ Replication

1. Select a Replication Group or Volume Pairs from the site view and right-click to invoke the context menu.
2. Click [Start OPC] to invoke the [Start OPC] dialog box and select from a range of OPC options.



3. Select one of the copy options as appropriate:

A Reverse copy checkbox option is provided if the copy is to be performed in the opposite direction, that is, from the destination to the Source.



Advanced Options

Detailed options other than the above can be specified from an extension dialog box by clicking the Advanced Options checkbox.

Start OPC

Label		Description
OPC		Performs OPC
QuickOPC		Performs QuickOPC
SnapOPC		Performs SnapOPC This checkbox cannot be specified under the following conditions: - When the replication source volume and the replication destination volume belong to different servers - When synchronous processing is in progress
SnapOPC+		Performs SnapOPC+ This checkbox cannot be specified under the following conditions: When the replication source volume and the replication destination volume belong to different servers When synchronous processing is in progress
Reverse copy		Creates a replica of the replication destination volume on the replication source volume
Pre- and post- scripts	Run scripts on the source devices	Performs pre- and post-processing for the replication source volume

Label		Description
	Flush file system buffers only. Do not lock source devices (Windows only).	Flushes the file system buffer for the replication source volume Valid for Windows only
	Run scripts on the destination devices	Performs pre- and post-processing for the replication destination volume Note that this checkbox must be unchecked to resume synchronous processing after a forced suspension.
Server-to-server replication	Skip device status check and pre-, post-processing scripts on non-operation server.	Valid at server-to-server replication only Select this checkbox if the following processing is to be performed: <ul style="list-style-type: none"> - Communication with the non-operation server - Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server

- Click [Advanced Options] to expand the dialog box to show more OPC advanced options.

Some options may be disabled according to the operating platform or type of replication. For details, refer to the "AdvancedCopy Manager's Operator Guide", section "Commands".

- Click [OK] to proceed with the OPC operation.

To check the latest progress of the OPC, right-click in the Details view and select [Refresh].



Point

[Copy Progress] is not automatically refreshed - to refresh and view the copy progress, right-click the Volume Pair or Replication Group, then select [Refresh] from the context menu.

If an error occurs, the error message dialog box is displayed. Check the error message, and then click [OK] to close the dialog box.

Messages indicating the success or failure of commands are also written to the console.

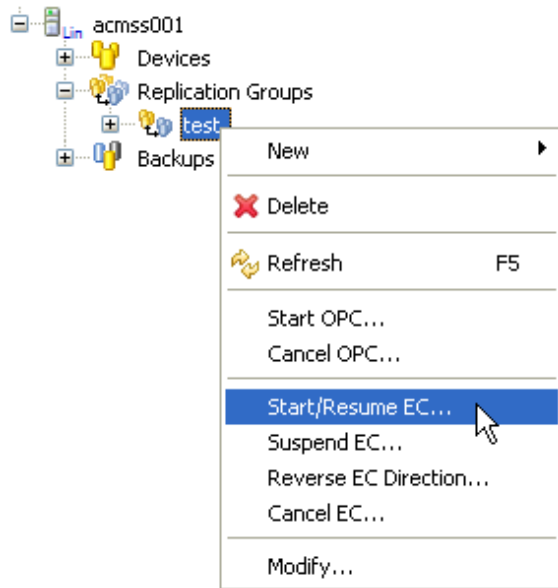
4.3.2 Equivalent Copy with Suspend and Resume

Synchronous Replication refers to replications that use the Equivalent Copy (EC) or Remote Equivalent Copy (REC) functions of ETERNUS disk storage systems. For details, refer to the "AdvancedCopy Manager Overview" or "AdvancedCopy Manager Operator's Guide".

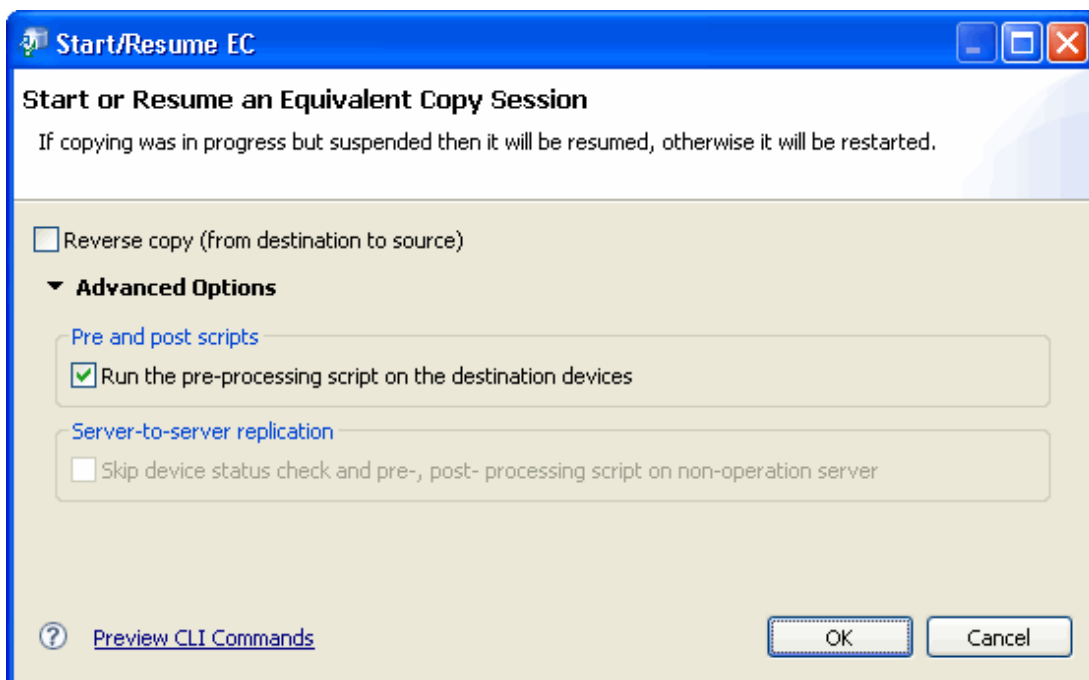
4.3.2.1 Start Synchronous Replication

Use the following procedure to perform synchronized replication (for details of how to replicate across different ETERNUS disk storage systems, refer to "4.3.3 Remote Equivalent Copy (REC) ").

1. From either the Site view or the Replications groups list in details view, select a single EC/OPC Replication Group or source/destination device pair and right-click the object to invoke the context menu.



2. Select [Start/Resume EC] to invoke the [Start/Resume EC] dialog box.
3. Select the required options for the Start/Resume EC dialog box.



Advanced options

Click [Advanced options] to expand the dialog box to reveal advanced options for synchronous replication.

For details on the synchronous replication options, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Command" > "Operation commands" > "swsrstartsync (Synchronous processing start command)".

Start/Resume EC

Label	Description
Reverse copy	Reverses the replication direction and executes synchronous processing from the replication destination to the replication source
Run the pre-processing script on the destination devices	Runs the pre-processing script on the destination volumes
Skip device status check and pre-, post-processing script on non-operation server	Valid at server-to-server replication only Select this checkbox if the following processing is to be performed: Communication with the non-operation server Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server

4. Click [OK] to proceed with the synchronous replication.

The relevant fields in the Details view are immediately updated.

Point

The copy progress field is not refreshed automatically.

Right-click the Volume Pair to invoke the context menu, and select the [Refresh] option to update the copy progress field to monitor copy progress.

If an error occurs, the error message dialog box is displayed. Check the error message, and then click [OK] to close the dialog box.

Messages indicating success or failure are written to the console and are also updated in the corresponding event log.

4.3.2.2 Create a Replica Using the Suspend Option

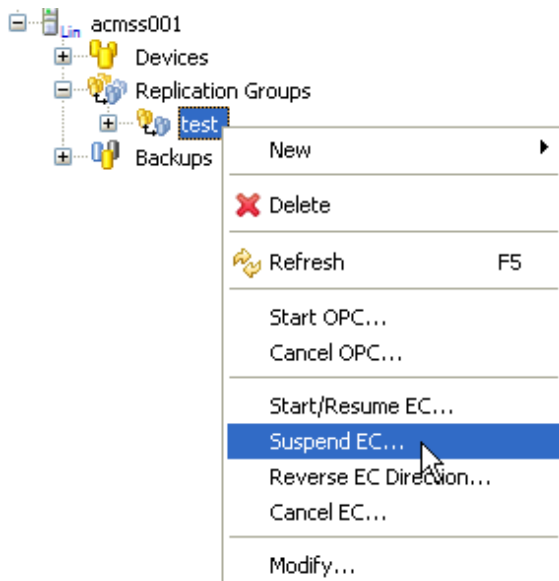
This section describes how to create a replica using the suspend option. The suspend option enables faster replication by copying the difference only.

The original (source) and replica (destination) volumes must have attained a state of equivalence in order to create a replica.

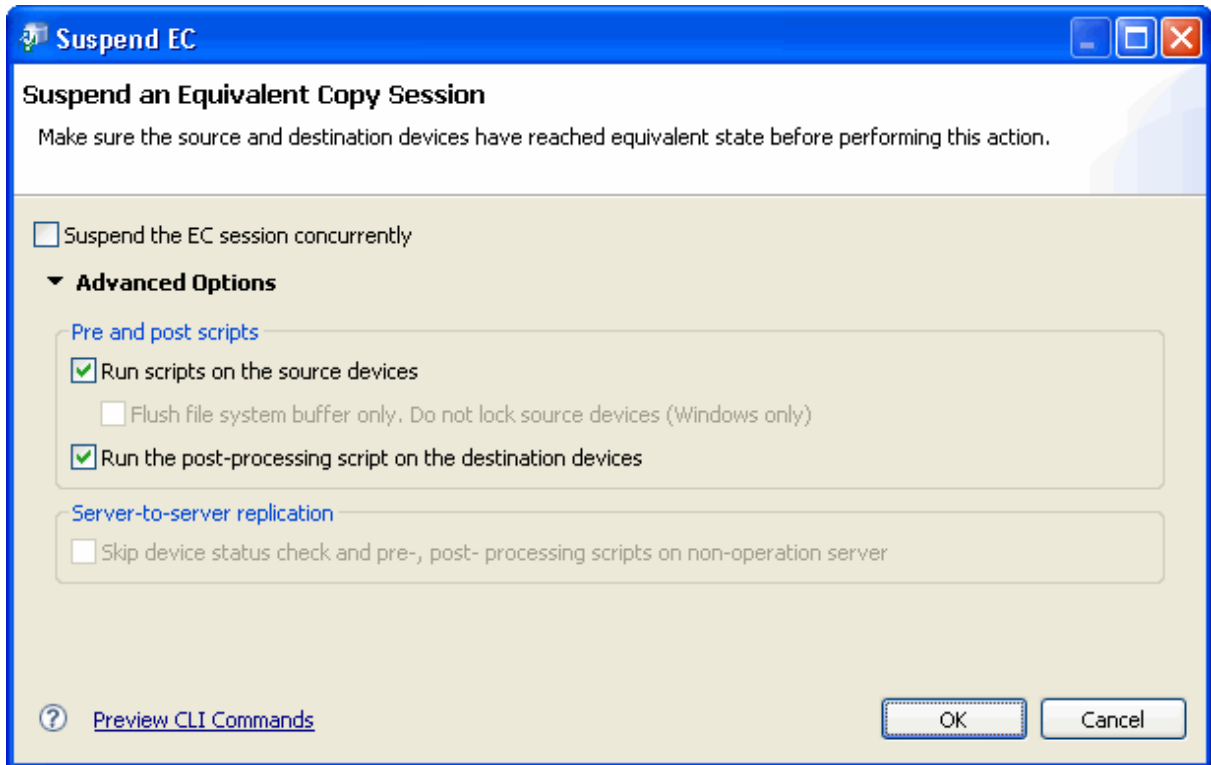
1. Right-click a Replication Group or Volume Pair to display the context menu.

Select the [Refresh] option to update the copy progress field in the Details view to ensure that the Replication Group or Volume Pairs have attained equivalency maintenance state.

If a Replication Group is selected, ensure that all Volume Pairs in the group have attained equivalency maintenance state.



- From either the Site view or the Replications groups list in the Details view, select a single EC/OPC Replication Group or source/destination volume pair and right-click the object.
- From the context menu, select [Suspend EC] to invoke the [Suspend EC] dialog box.



Advanced options

Click [Advanced options] to expand the dialog box to reveal advanced options.

Suspend EC

Label		Description
Suspend the EC session concurrently		Specify this option to create a replica using the concurrent suspend function. The option is not supported when the operation is linked to GDS Snapshot.
Pre- and post- scripts	Run scripts on the source devices	Performs pre- and post-processing of the replication source volume
	Flush file system buffer only. Do not lock source devices (Windows only)	Flushes the file system buffer for the replication source volume Valid for Windows only
	Run the post-processing script on the destination devices	Performs post-processing of the replication source volume
Server-to-server replication	Skip device status check and pre-, post- processing scripts on non-operation server	This checkbox is valid for server-to-server replication only. Select this checkbox to perform the following processing : Communication with the non-operation server Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server

- Click [OK] to proceed with the creation of a replica by suspending.

4.3.2.3 Resume a Synchronous Replication using the Resume Option

Resuming synchronized processing on the selected Replication Group or Volume Pair can be performed using the Resume option.

1. Select a single EC/OPC Replication Group or source/destination device pair from either the Site view or the Replications Groups list in details view, and right-click the object to invoke the replication context menu.
2. Select [Start/Resume EC] to invoke the [Start/Resume EC] dialog box.

For details on this operations, refer to "[4.3.2.1 Start Synchronous Replication](#)".

4.3.3 Remote Equivalent Copy (REC)

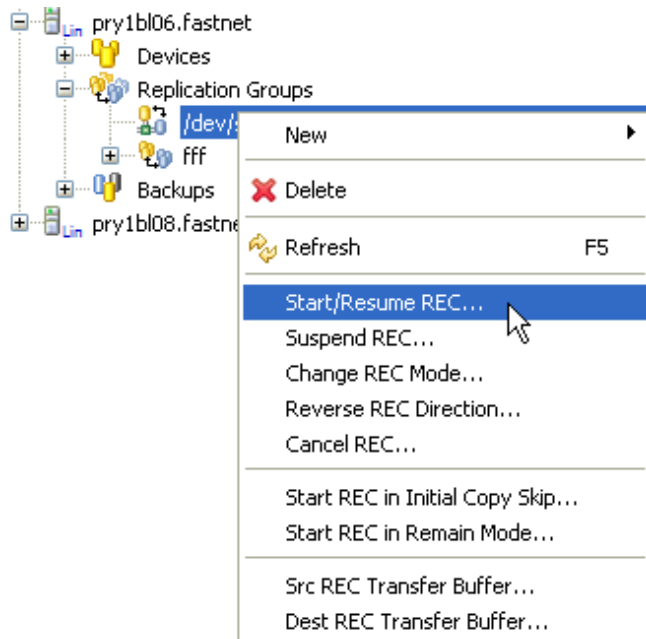
Remote Equivalent copy (REC), also known as Inter-ETERNUS synchronous replication, creates a replication from a source volume to a destination volume that is supported in a different ETERNUS using the REC function of the disk array.

The REC function supports the following copy modes:

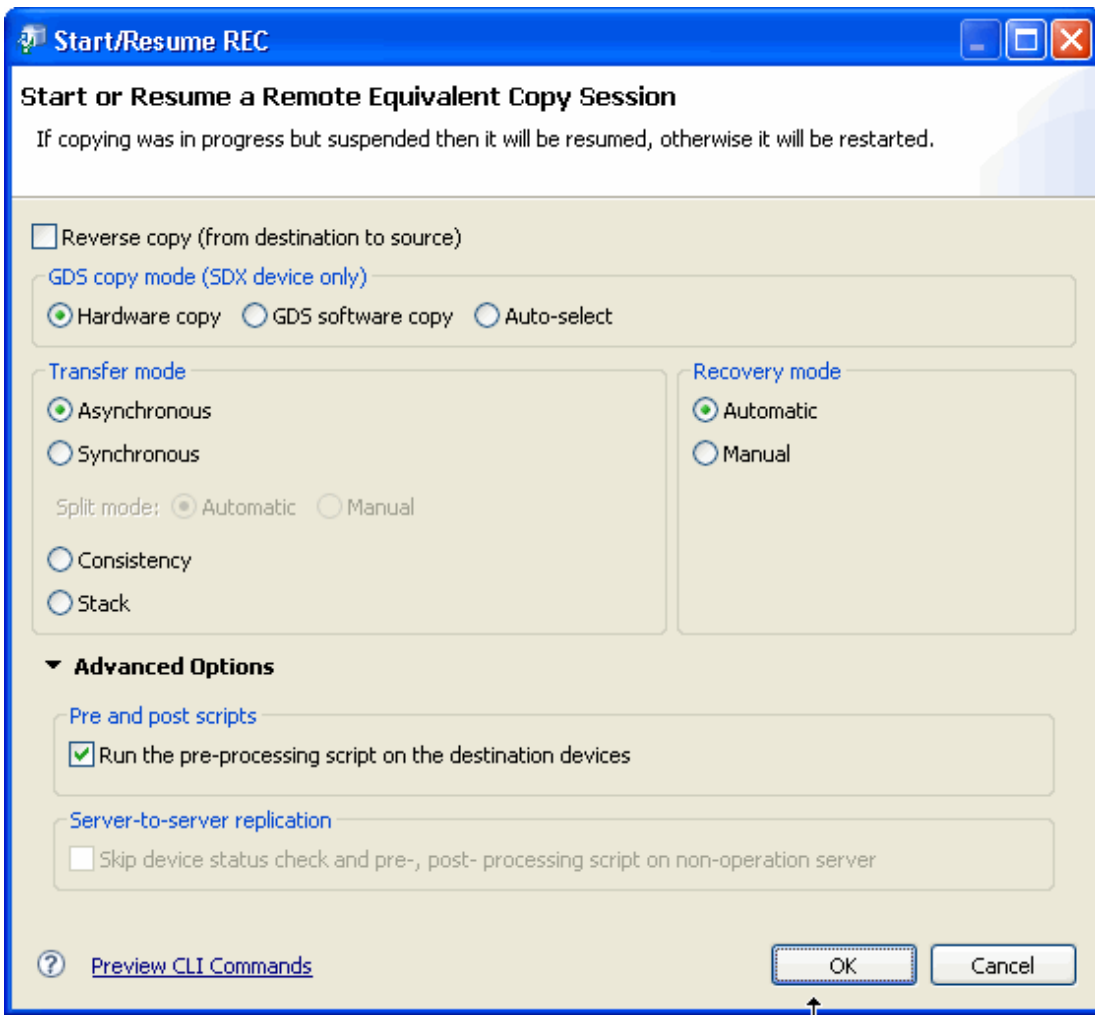
- Transfer mode
- Recovery mode
- Split mode

4.3.3.1 Start a Remote Equivalent Copy Session (REC)

1. Select an REC Replication Group or Volume Pair from the site view and right-click to invoke the context menu.



- Click [Start/Resume REC] to invoke the [Start/Resume REC] dialog box to configure the replication.



- Specify options as appropriate.

Advanced Options

Detailed options other than the above can be specified from an extension dialog box by clicking the [Advanced Options] check box.

Start/Resume REC

Label	Description
Reverse copy	Reverses the replication direction, and executes the synchronous processing from the replication destination volume to the replication source volume
Hardware copy	Specifies to start synchronous processing using the disk array unit copy (OPC/EC)
GDS software copy	Specifies that the synchronous processing is to be started without specifying a copy type such as copying by the disk array unit (OPC/EC) or soft copying. GDS will select the copy type to be used.
Auto-select	Specifies that the synchronous processing of SDX objects is to be started using the software copy function and not the AdvancedCopy function. If the option is specified when the AdvancedCopy function is in use but differential copying has been started, the AdvancedCopy processing is terminated and the soft copy processing will be executed.
Transfer mode	Sets the transfer mode of the device-to-device synchronous processing. The option cannot be set when the status is "Replicated". When the synchronous mode is selected, the Split mode must be specified. - Asynchronous : Asynchronous mode

Label	Description
	<ul style="list-style-type: none"> - Synchronous : Synchronous mode - Consistency : Consistency mode - Stack : Stack mode
Recovery mode	<p>Sets the Recovery mode for the device-to-device synchronous processing. The option cannot be set when the status is "Replicated".</p> <ul style="list-style-type: none"> - Automatic : Automatic Recovery mode - Manual : Manual Recovery mode
Split mode	<p>Specifies to start synchronous processing using the disk array unit copy (OPC/EC) Sets the Split mode for the device-to-device synchronous processing. The mode can be set only when the "transfer mode" is "synchronous". The option cannot be set when the status is "Replicated".</p> <ul style="list-style-type: none"> - Automatic : Automatic Split mode - Manual : Manual Split mode
Execute pre-processing for the replication destination device	Select this check box to perform pre-processing for the replication destination volume.
Skip device status check and pre-, post-processing script on non-operation server	<p>Valid at server-to-server replication only.</p> <p>Select this checkbox to perform the following processing:</p> <p>Communication with the non-operation server</p> <p>Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server</p>

4. Click [OK] to start the synchronous processing.
5. The copy progress is not refreshed automatically. Right-click on the Replication Group or Volume Pair to open the context menu and select [Refresh] to check the latest copy status.

4.3.3.2 Create a Replica using the REC Suspend Option

The REC suspend option suspends the equivalency maintenance state of EC/REC and creates a replica of the replication source volume. By copying data differentially from the suspend status using this function, the speed of the synchronous replication operation can be increased.

The original (source) and replica (destination) volumes must have attained a state of equivalence in order to create a replica.

To create a replica in the synchronous replication operation in Stack mode or Consistency mode, either of the following must be performed.

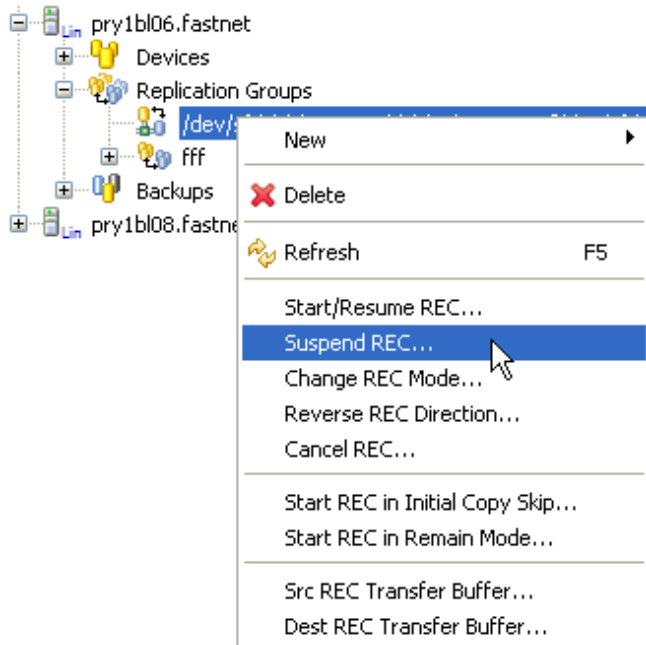
For Consistency mode

1. Change the transfer mode
 - At Change Transfer Mode, change the transfer mode to Asynchronous mode
 - Create a replica
 - At Change Transfer Mode, change the transfer mode to Consistency mode
2. Specify Concurrent Suspend, and create a replica

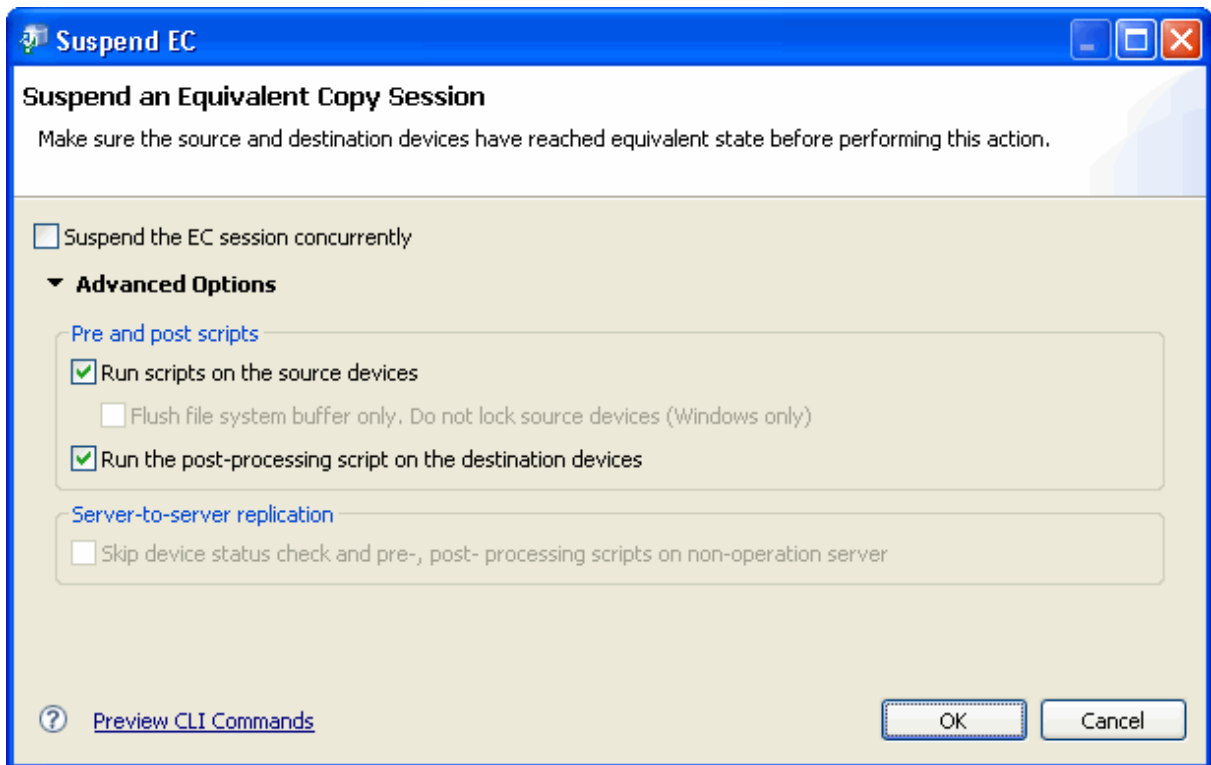
For Stack mode

1. Change the transfer mode
 - At Change Transfer Mode, change the transfer mode to Asynchronous mode
 - Create a replica

- At Change Transfer Mode, change the transfer mode to Stack mode
2. Create a replica using the following procedures:
 3. Check the Details view for the Volume Pair to ensure they have reached a state of equivalence.
If this is a replication group, ensure that all the Volume Pairs have attained equivalency maintenance state.
 4. Select the [Suspend REC] option from the context menu to invoke the [Suspend REC] dialog box.



5. Select options as appropriate and click [OK] to proceed with the suspend to create a replica.
For details, refer to "[4.3.3.2 Create a Replica using the REC Suspend Option](#)".



4.3.3.3 Resume an REC Synchronous Replication Using the Resume option

Resuming a Remote Equivalent Copy (REC) session processing on the selected Replication Group or Volume Pair can be performed using the Resume function.

1. Select an REC Replication Group or source/destination Volume Pair from either the Site view or the Replications groups list in details view, and right-click the object to invoke the replication context menu.
2. Select [Start/Resume REC] to invoke the [Start/Resume REC] dialog box.

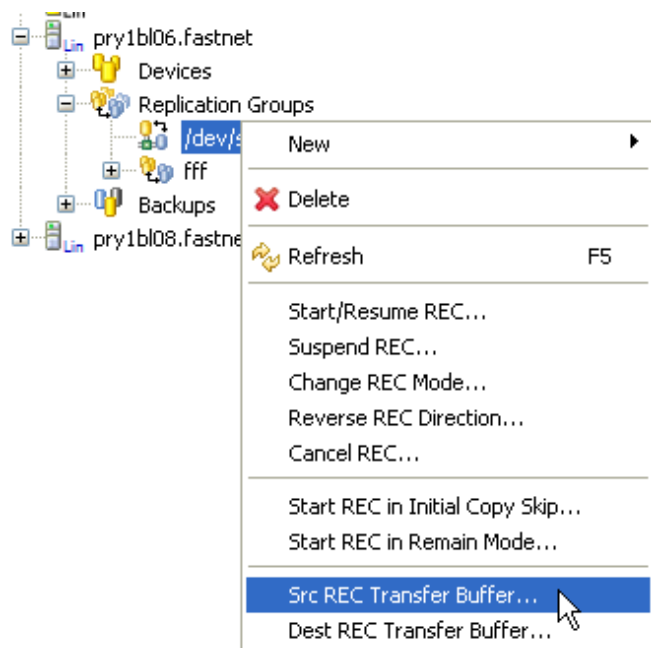
For details on this operation, refer to "4.3.3.1 Start a Remote Equivalent Copy Session (REC)".

4.3.3.4 Transfer Mode

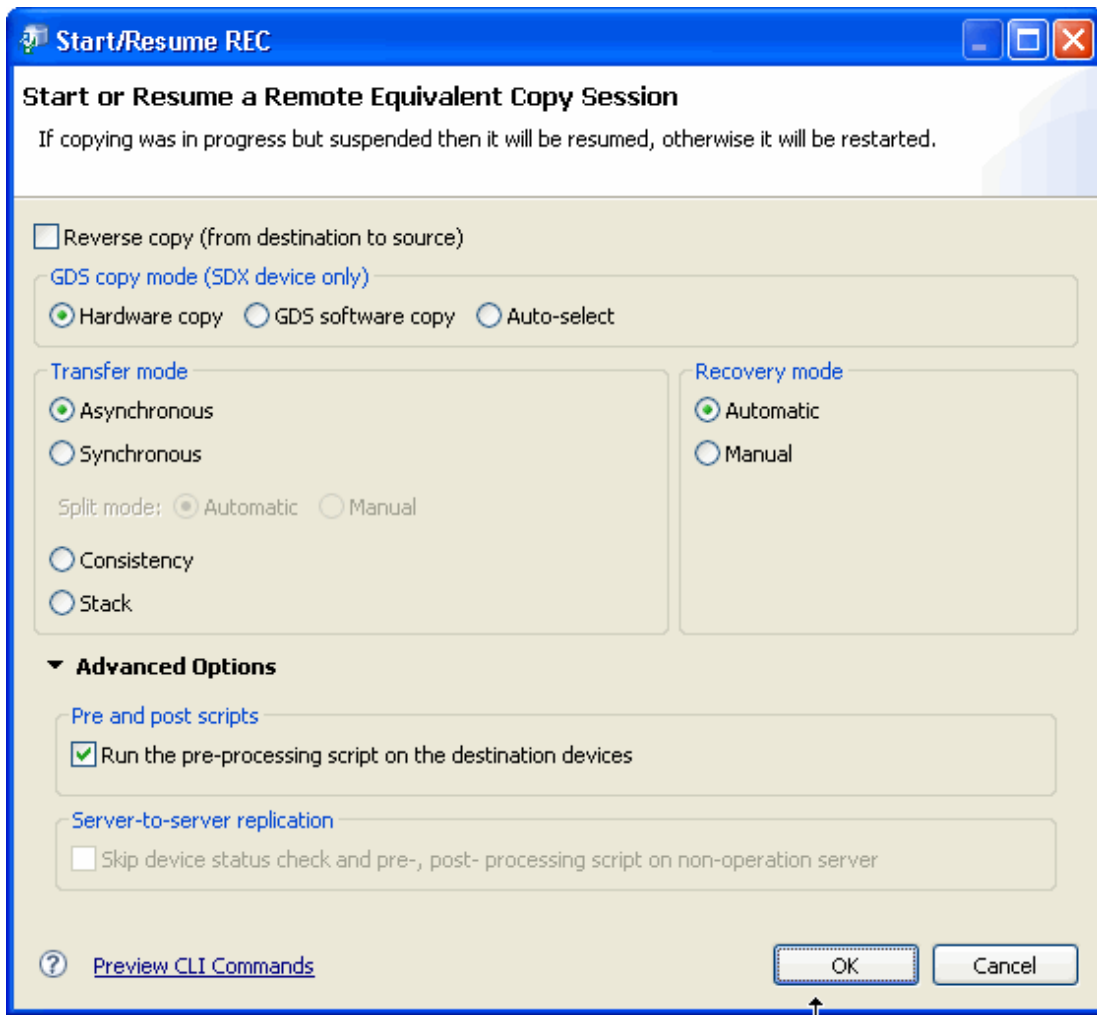
Remote Equivalent Copy (REC) has two transmission modes, asynchronous transmission mode and synchronous transmission mode.

Change the REC Transfer Mode during Replication

1. Select the relevant REC Replication Group or source/destination Volume Pair from either the Site view or the Replications groups list in the Details view, and right-click the object to invoke the replication context menu. Select [Change REC Mode] to invoke the [Change REC Mode] dialog box.



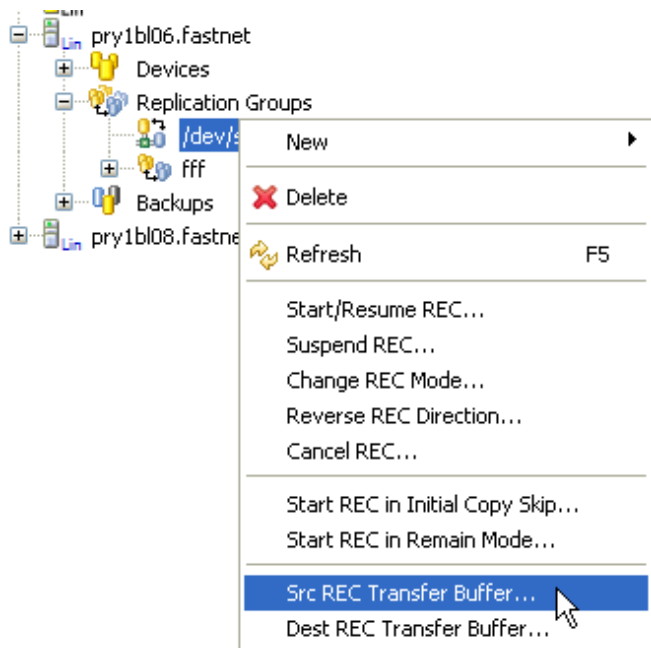
2. Select the required REC mode as appropriate and click [OK] to continue.



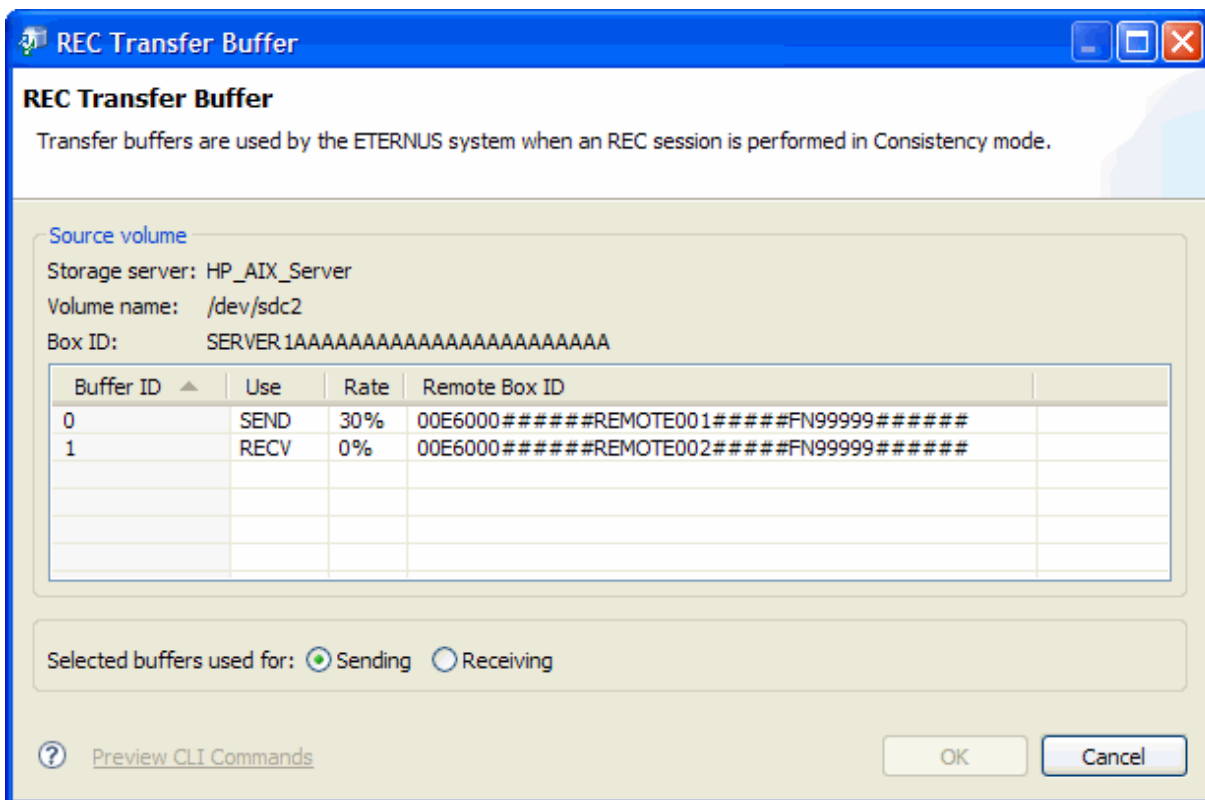
4.3.4 View and Change the Transfer Buffer

Right-click on a Volume Pair from the Site view and select the [Src REC Transfer Buffer] or [Dest REC Transfer Buffer] option from the context menu to invoke the [REC Transfer Buffer] dialog box.

The [Alternate GDS path] dialog box will be displayed if either the source or destination devices are a GDS/SDX device.



For Non GDS/SDX devices



REC Transfer Buffer

Label	Description
Storage server	Displays the name of the server that manages the replication source volume
Volume name	Displays the name of the replication source volume
Box ID	Displays the Box ID of the replication source volume

Label	Description
Buffer ID	Displays the buffer ID
Use	Displays the usage currently set for the buffer. <ul style="list-style-type: none"> - SEND : The buffer is set for sending - RECV : The buffer is set for receiving
Rate	Displays the buffer usage as a percentage (%)
Remote Box ID	Displays the Box ID of the volume set as the destination
Selected buffers used for:	Sets the usage of the buffer to be changed <ul style="list-style-type: none"> - Sending : Sets the buffer for sending - Receiving : Sets the buffer for receiving

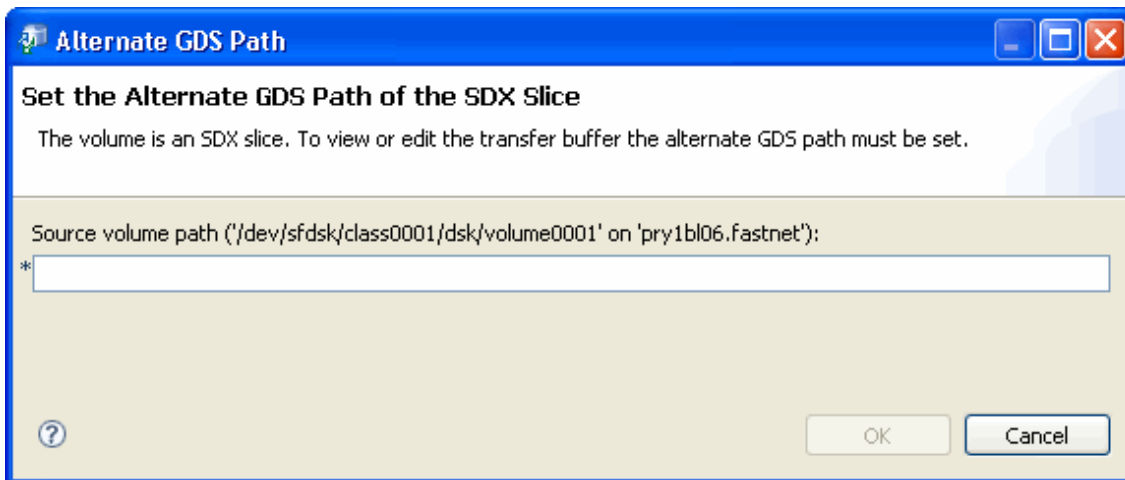
Note

The receiving use rate of the buffer is always shown as 0%.

Select the required buffer and designate it as a [Sending] or [Receiving] buffer using the [Selected buffers used for:] radio buttons at the bottom of the dialog box. Check the selection and click [OK] to change the buffer information.

For GDS/SDX devices

If either the source or destination volume is GDS/SDX device, the following [Alternate GDS Path] dialog box is displayed.



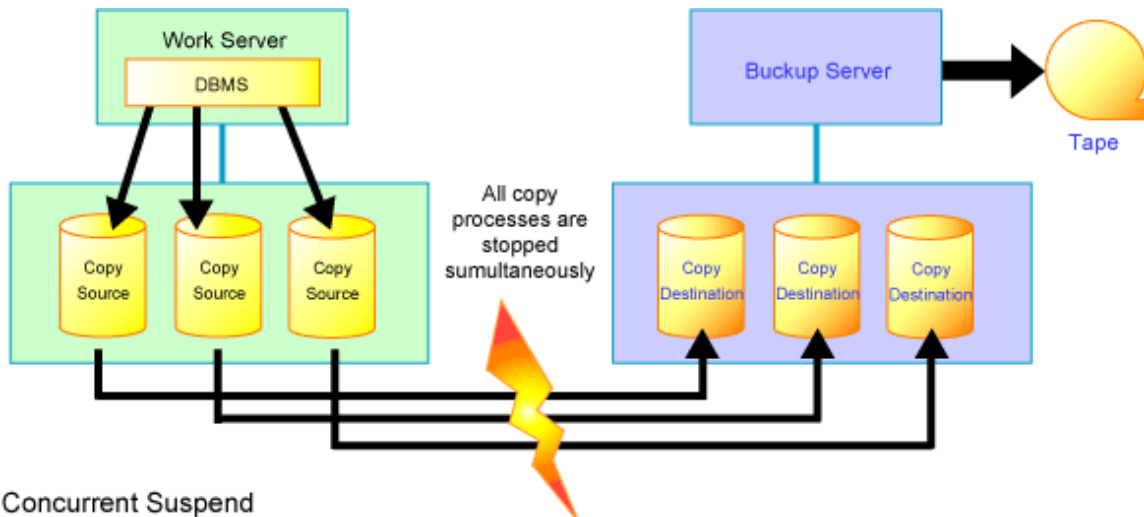
Enter the alternate GDS path and click [OK] to change the buffer information.

4.3.5 Concurrent Suspend Function

The Concurrent Suspend function simultaneously suspends multiple synchronous replication sessions and can be used with either Equivalent Copy (EC) or Remote Equivalent Copy (REC).

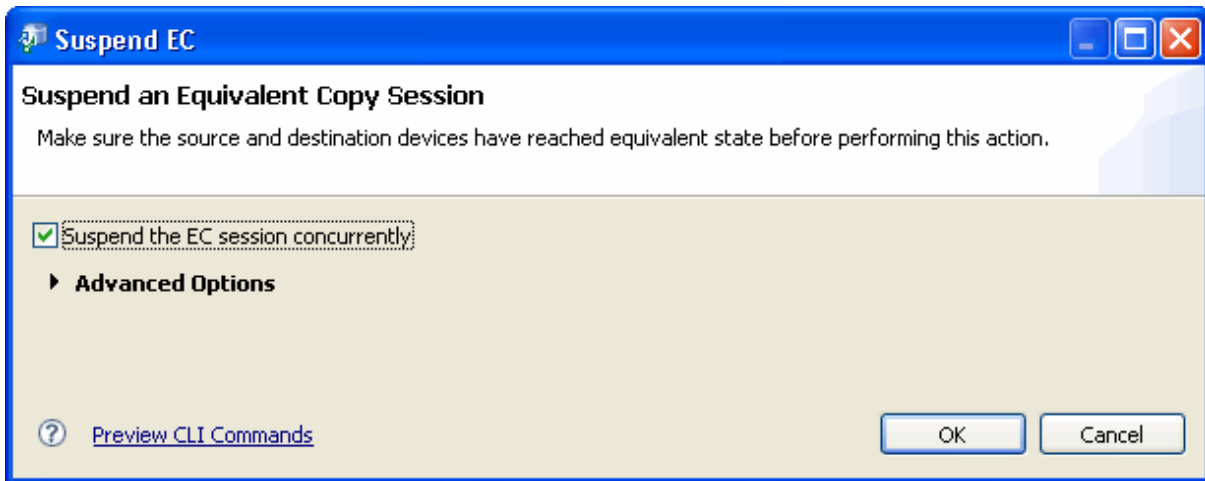
By using this function, copies of multi-volume data objects such as databases can be easily taken with guaranteed consistency.

For details on the Concurrent Suspend functionality when performing replication, refer to the "AdvancedCopy Manager Operator's Guide", section "Replication" > "Operations" > "Executing synchronized replication" > "Concurrent suspension function".



Concurrent Suspend

Replication using the Concurrent Suspend function can be performed by checking the [Suspend the EC session concurrently] checkbox.



4.3.6 Initial Copy Skip Process

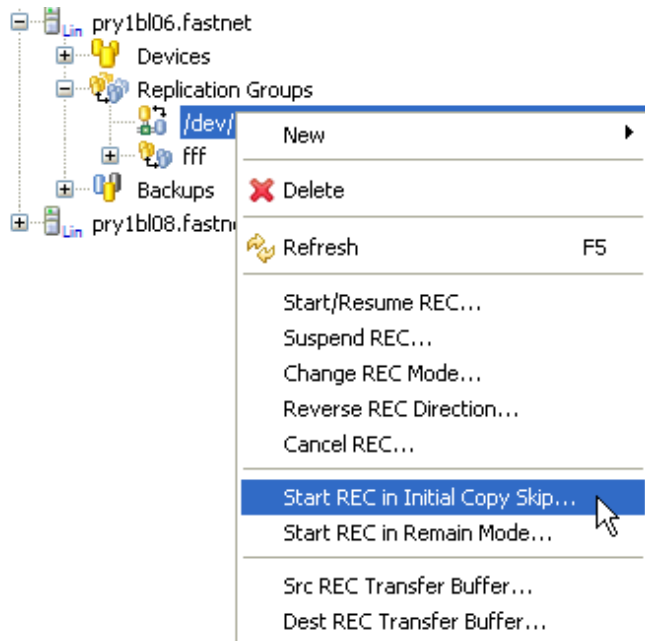
The Initial Copy Skip function enables replication when communications between the source and destination volumes are too slow to allow the initial copy to be performed.

This function effectively starts the copy and then immediately suspends it so that the initial copy, usually to tape, can be transported to the destination site where the replication session is resumed using the [Remain] option.

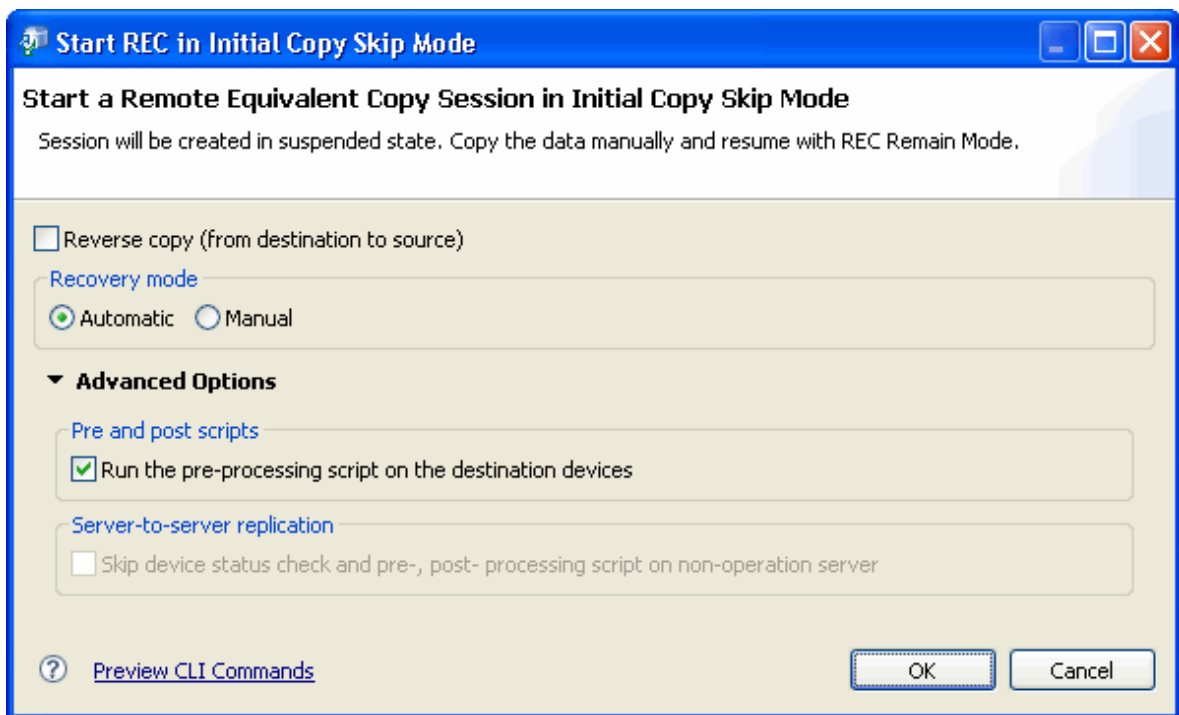
Once the copy from the tape to the destination volume is complete, the session is resumed to copy updates from the source volume to the destination volume.

Execute an Initial Copy Skip process using the following procedure:

1. Right-click the relevant Replication Group or Volume Pair to invoke the context menu and click the [Start REC in Initial Copy Skip] option to invoke the [Start REC in Initial Copy Skip Mode] dialog box.



2. Click [Advanced Options] to expand the dialog box and select detailed options other than the above options as required.



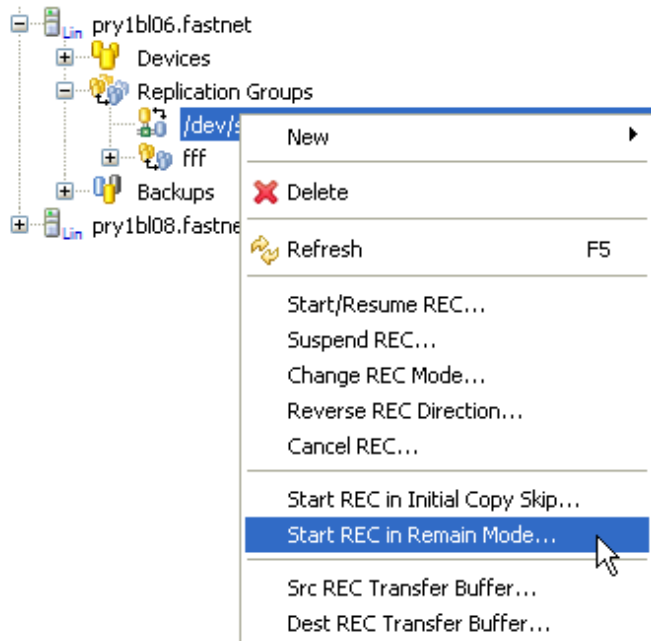
For details on the available options, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands".

3. Click [OK] to start the replication session in Initial Copy Skip mode.

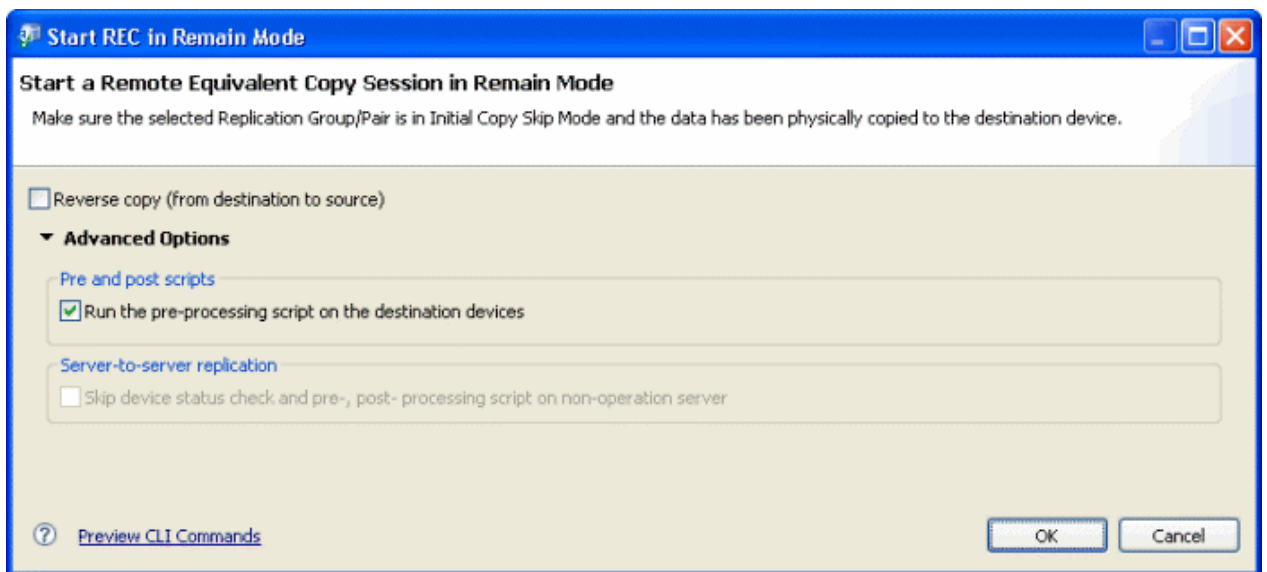
4.3.7 Remain Mode

Use the Remain mode after the source data has been copied to the destination and after initial copy skip has been completed. Restarting synchronous processing in Remain mode means that only data that has been updated on the copy source volume after synchronous processing has been started in the Initial Copy Skip process is reflected on the copy destination volume when the copy is resumed.

1. Right-click the relevant Replication Group or Volume Pairs to invoke the context menu and select the [Start REC in Remain Mode] option to invoke the [Start REC in Remain Mode] dialog box.



2. Click [Advanced Options] to expand the dialog box and select available options as required.



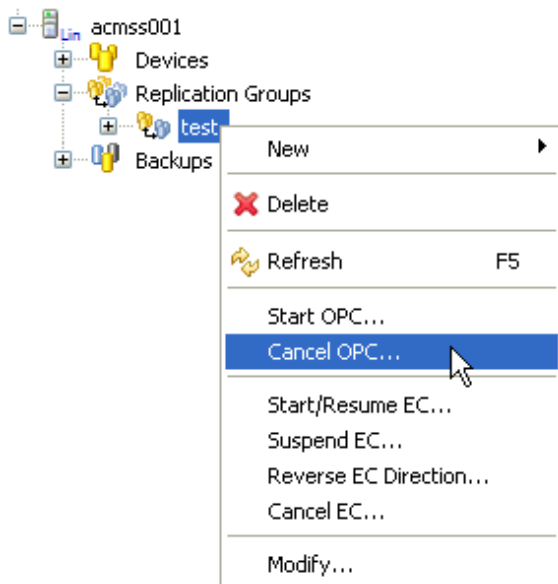
3. Click [OK] to restart the session in Remain mode.
4. The current copy status is not refreshed automatically. Right-click the transaction volume to open the context menu and select [Refresh] to check the latest copy status.

4.3.8 Cancel a Replication session

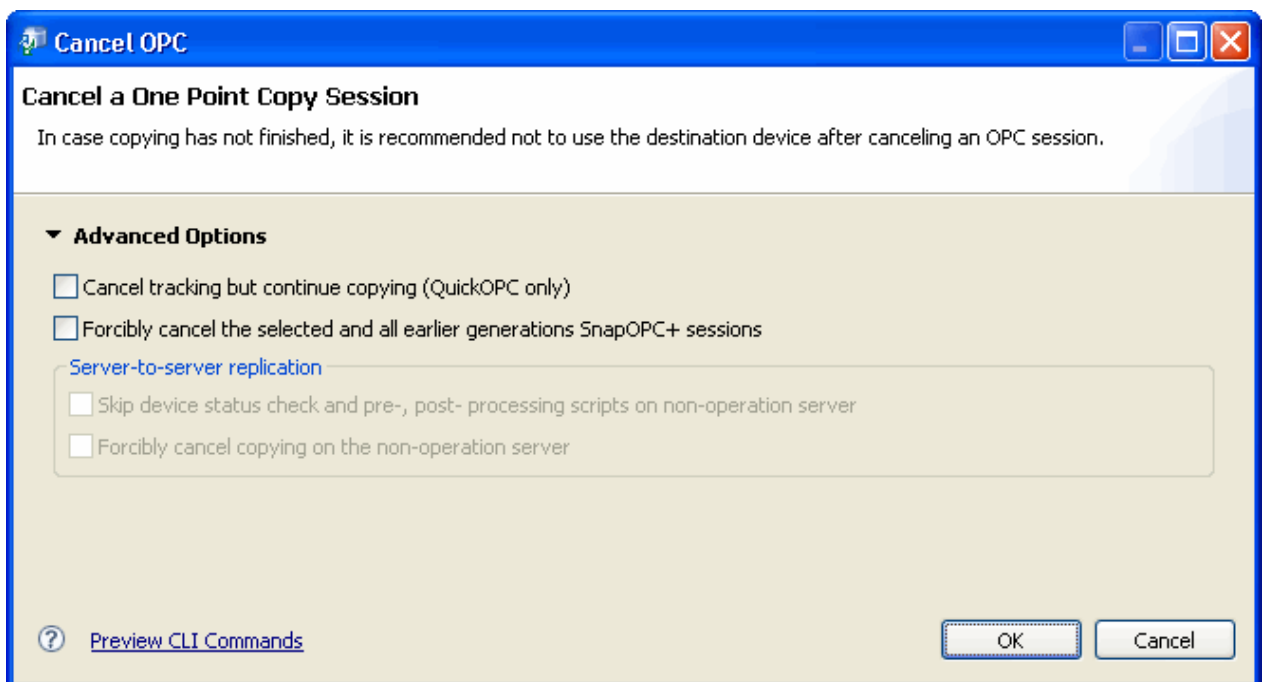
4.3.8.1 Cancel a One Point Copy (OPC) Session

Only users with execute replication permission can cancel a replication session.

1. Select the Site view or the Details view and right-click on the replication group or Volume Pair to invoke the context menu.



2. Select [Cancel OPC] to invoke the [Cancel OPC] dialog box.



3. Click [Advanced Options] to expand the dialog box for more advanced cancellation options if required.

Cancel OPC

Label	Description
Cancel tracking but continue copying (QuickOPC only)	Stops differential snapshot processing. This option only stops tracking processing, without stopping the Snapshot processing. This checkbox is enabled in the following cases: <ul style="list-style-type: none"> - When the status is not "----" - When tracking is "ON"

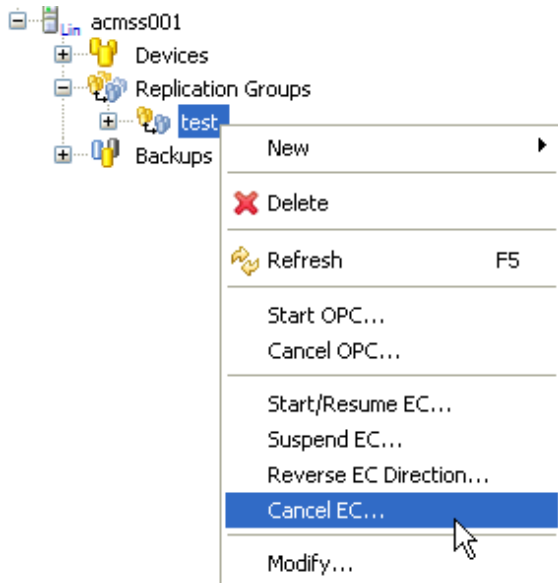
Label	Description
Forcibly cancel the selected and all earlier generations SnapOPC+ sessions	Forcibly stops SnapOPC+ sessions. The specified Snap generation and all earlier Snap generations are stopped.
Skip device status check and pre-, post- processing scripts on non-operation server	Valid at server-to-server replication only Select this checkbox if the following processing is to be performed: <ul style="list-style-type: none"> - Communication with the non-operation server - Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server
Forcibly cancel copying on the non-operation server	Forcibly stops copy processing from the non-operation server. This checkbox is enabled in the following cases: <ul style="list-style-type: none"> - When the server is not operating - When server-to-server replication is being performed

For details on these options, refer to the " AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Commands" > " Operation commands" > "swsrpcancel (Replication cancelation command)".

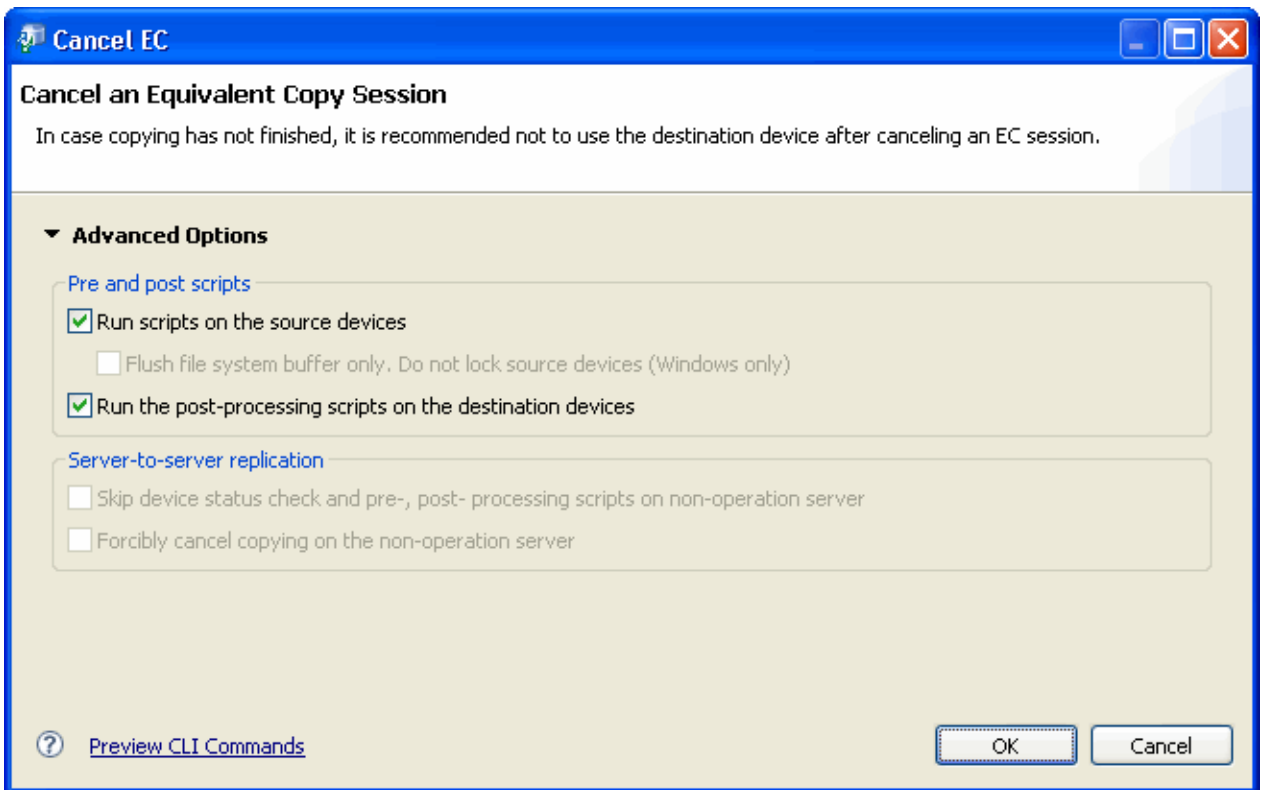
4. Click [OK] to cancel the OPC session.

4.3.8.2 Cancel an Equivalent Copy (EC) Session

1. Select the Site view or the Details view and right-click on the relevant Replication Group or Volume Pair to display the context menu.



2. Click [Cancel EC] to invoke the [Cancel EC] dialog box.



3. Click the [Advanced Options] link to expand the dialog box and set the required options.

Cancel EC

Label	Description
Run scripts on the source devices	Performs pre- and post-processing for the replication source volumes. This checkbox is enabled only when the copy status is "equivalent".
Flush file system buffer only (Windows only)	Performs flush processing instead of lock processing for the file system buffer of the replication source volumes. This checkbox is enabled only when the copy status is "equivalent".
Run the post-processing scripts on the destination devices	Performs pre- and post-processing for the replication destination volumes. This checkbox is enabled only when the copy status is "equivalent".
Skip device status check and pre-, post- processing scripts on non-operation server	Valid at server-to-server replication only Select this checkbox if the following processing is to be performed: <ul style="list-style-type: none"> - Communication with the non-operation server - Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server
Forcibly cancel copying on the non-operation server	Forcibly stops copy processing from the non-operation server. This checkbox is enabled in the following cases: <ul style="list-style-type: none"> - When the server is non-operation server - When server-to-server replication is being performed

For details on these options, refer to the " AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Commands" > " Operation commands" > "swsrpscancel (Replication cancelation command)".

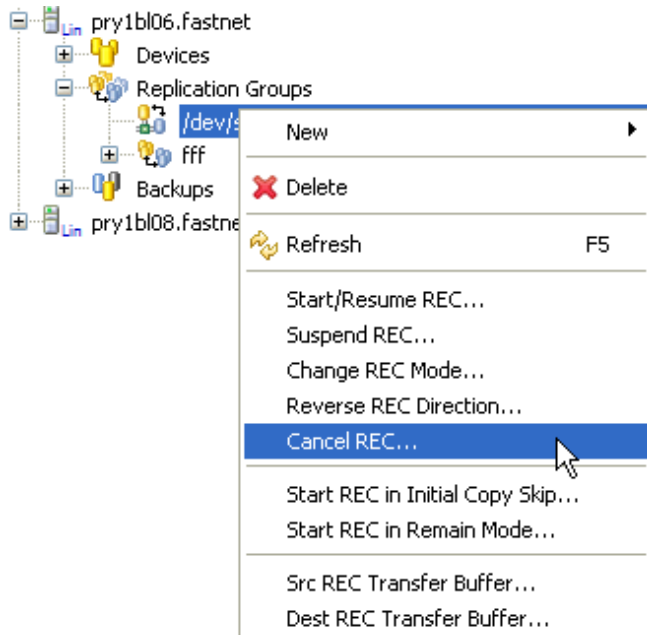
4. Click [OK] to start the cancellation and close the dialog box.

4.3.8.3 Cancel a Remote Equivalent Copy (REC) Session

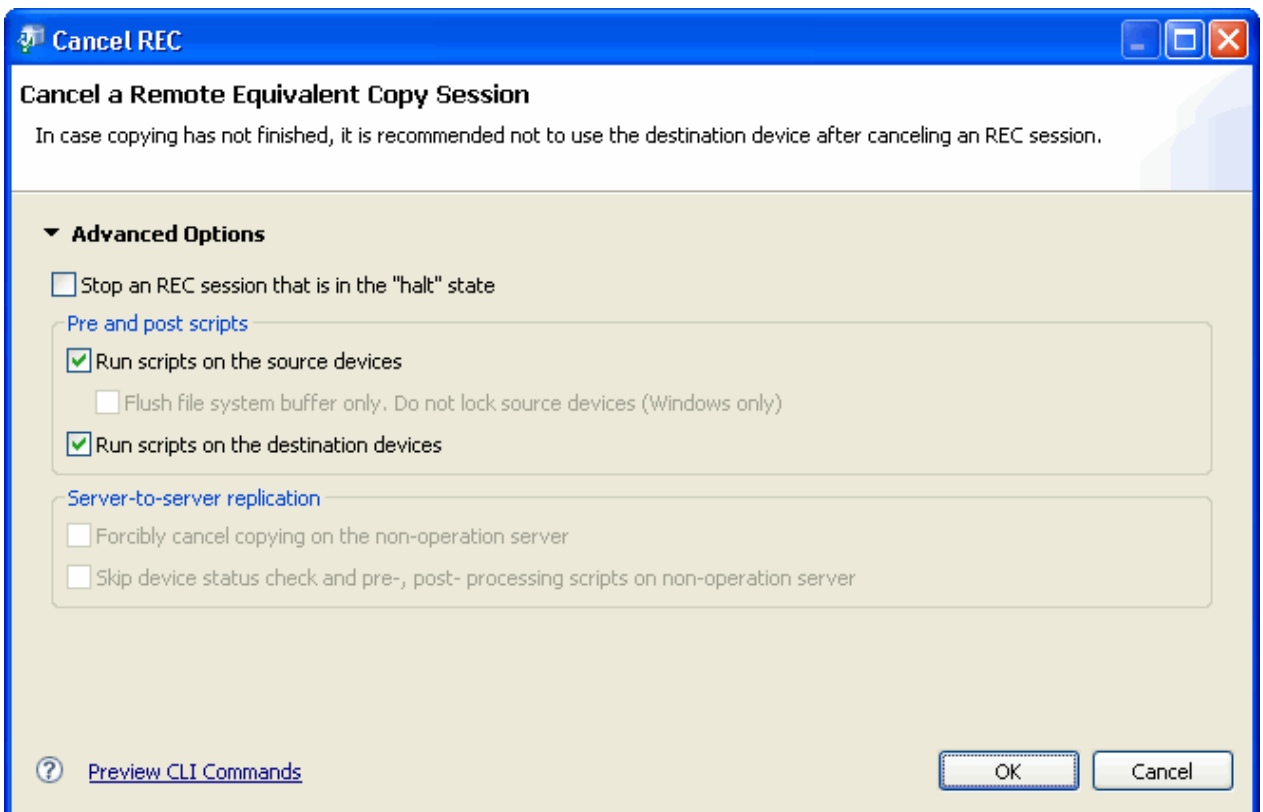
This section describes the procedures required to cancel a replication session between a source and destination volumes on different servers.

Only users with execute replication permission may cancel a Remote Equivalent Copy (REC) replication session.

1. Select the Site view and right-click on the relevant replication group or Volume Pairs to display the context menu.



2. Select [Cancel REC] to invoke the [Cancel REC] dialog box.
3. Click [Advanced Options] to expand the dialog box and set the required options.



Cancel REC

Label	Description
Stop an REC session that is in the "halt" state	Stops copy processing if the status is "halt". This checkbox can be selected only if the copy status is "halt".
Run scripts on the source devices	Performs pre- and post-processing for the replication source volumes. This checkbox is enabled only when the copy status is "equivalent".
Flush file system buffer only (Windows only)	Performs flush processing instead of lock processing for the file system buffer of the replication source volumes. This checkbox is enabled only when the copy status is "equivalent".
Run scripts on the source devices	Performs pre- and post-processing for the replication source volumes. This checkbox is enabled only when the copy status is "equivalent".
Skip device status check and pre-, post- processing scripts on non-operation server	Valid at server-to-server replication only Select this checkbox if the following processing is to be performed: <ul style="list-style-type: none"> - Communication with the non-operation server - Volume status confirmation processing or pre-processing for the replication destination volume of the non-operation server
Forcibly cancel copying on the non-operation server	Forcibly stops copy processing from the non-operation server. This checkbox is enabled in the following cases: <ul style="list-style-type: none"> - When the server is non-operation server - When server-to-server replication is being performed

4. Click [OK] to start the cancellation and close the dialog box.

Clicking [Cancel] at any time closes the dialog box without performing the cancellation.

4.4 Restore

Restoration can be performed for a Volume Pair or Replication Group if bi-directional copying was enabled. This can be done either by replicating from the destination volume to the source volume or reversing the direction of synchronization.

Information

Restoring from SnapOPC+ cannot be performed using the Replication function, but requires a manual process. The relevant sections of AdvancedCopy Manager's Operator's Guide and Command Reference manuals should be carefully considered before attempting a SnapOPC+ replication.

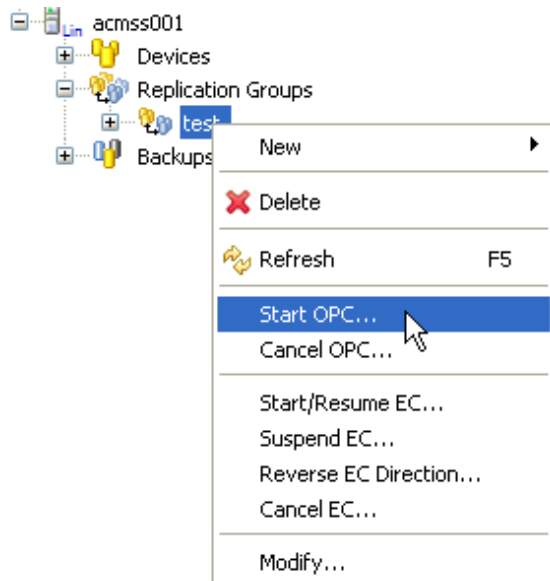
4.4.1 Replicate from Destination Volume to Source Volume

Replication from the destination volume to the source volume can be performed as follows.

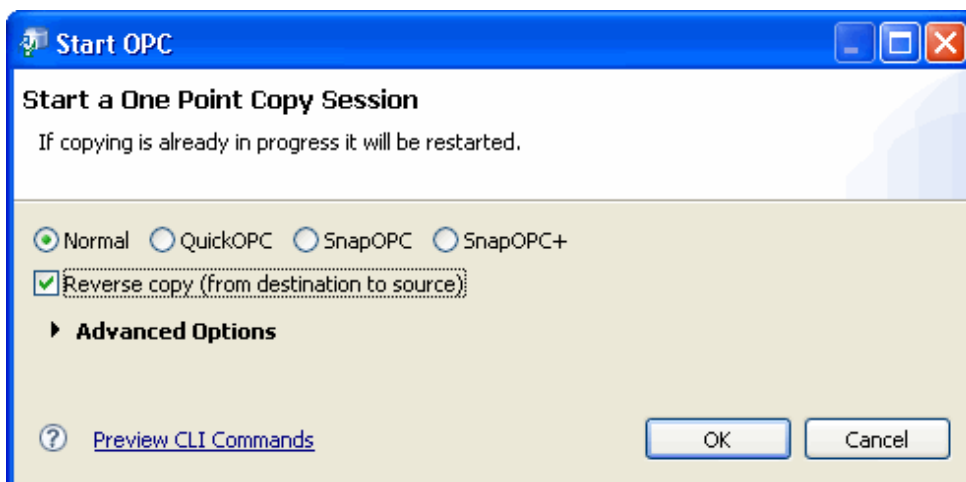
1. If a replication session is currently in progress, it must be cancelled before proceeding to restoration.

For details on this, refer to "[4.3.8.2 Cancel an Equivalent Copy \(EC\) Session](#)".

2. Select the Volume Pair or Replication Group to be restored from the site tree and right-click to invoke the context menu.



3. Select [Start OPC] to invoke the [Start OPC] dialog box.



4. The [Reverse copy (from destination to source)] option must also be enabled for the restoration.
Select other options as appropriate.
5. Click [OK] to start OPC from the destination volume to the source volume.
6. The copy progress is not refreshed automatically. Right-click the Replication Group or Volume Pair to open the context menu and select [Refresh] to check the latest copy status.

4.4.2 Reverse Direction of Replication

It is possible to reverse the copy direction of EC or REC, allowing you to easily toggle between source and destination volumes.

Note the followings before reversing the direction.

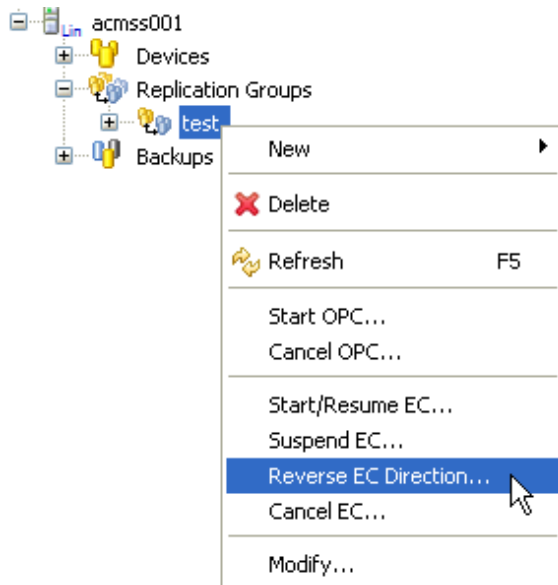
- The copy direction type must be set as bi-directional.
- The Volume Pair or Replication Group must be suspended and shown as "Replicated".
- Reversing the EC or REC direction is supported by your ETERNUS disk storage systems.

For details on these options, refer to the "AdvancedCopy Manager Operator's Guide", section "Commands" > "Replication Management Commands" > "Operation commands" > "swsrprevsync (Synchronization reverse command)".

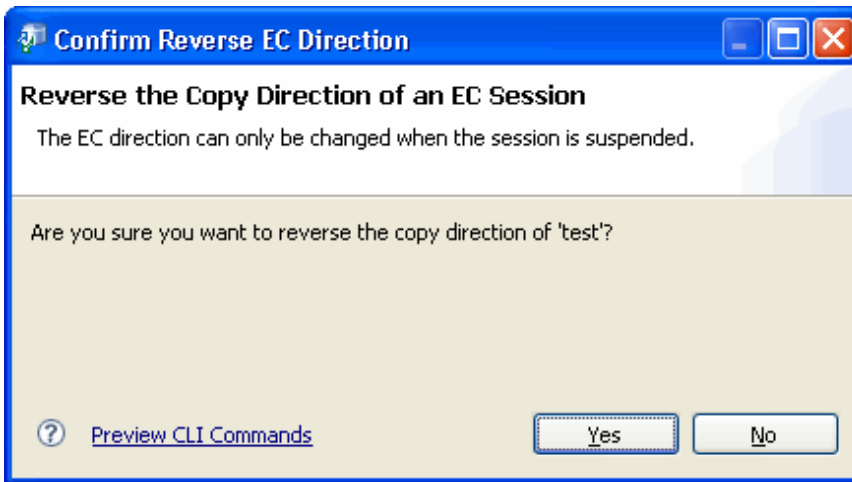
4.4.2.1 Reverse the EC Direction

The synchronous processing direction of an EC session can be reversed as follows.

1. Ensure the Volume Pair or Replication Group is suspended.
For details on how to do that, refer to "[4.3.2.2 Create a Replica Using the Suspend Option](#)".
2. Right-click the Replication Group or Volume Pair to invoke the context menu, and select the [Reverse EC Direction]. [Confirm Reverse EC Direction confirmation] dialog box is displayed.



3. Check that the Replication Group or Volume Pair for which the copy direction is to be changed is correct.



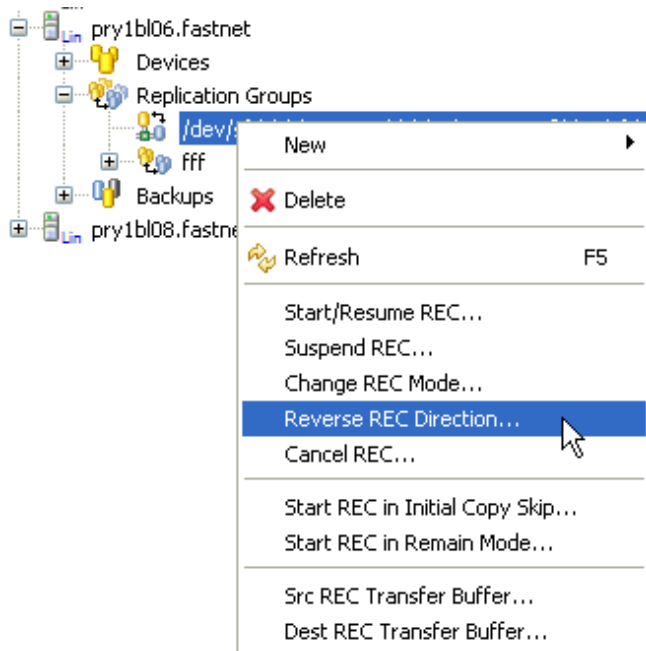
4. Click [Yes] to confirm the copy direction change.
5. Select the reversed Volume Pair or Replication Group from the site view. Right-click to invoke the EC replication context menu.
6. Select [Start/Resume EC] to resume the synchronization.

4.4.2.2 Reverse the REC Direction

The synchronous processing direction of a REC session can be reversed as follows.

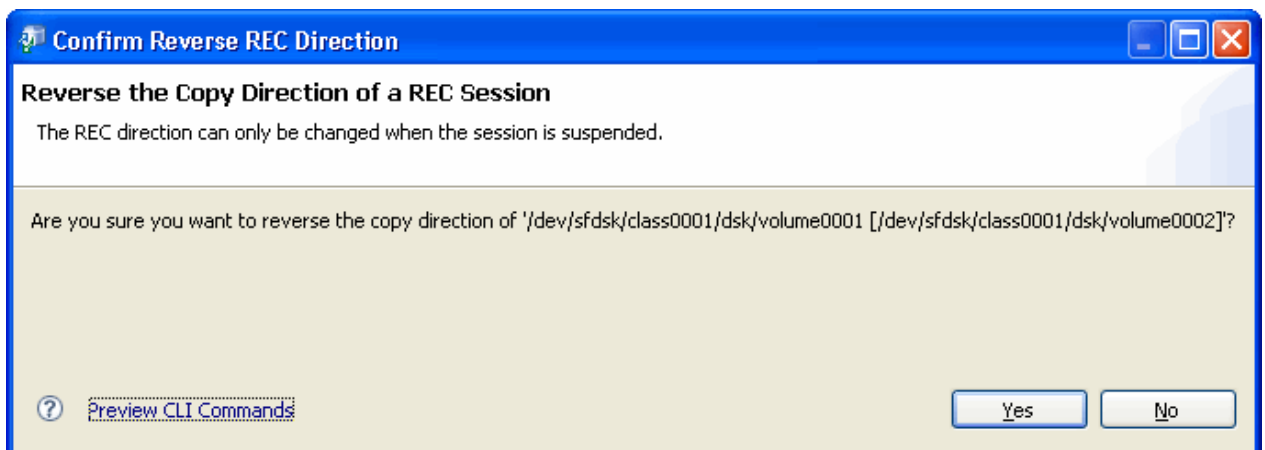
1. Ensure the Volume Pair or Replication Group is suspended.
For details on how to do that, refer to "[4.3.3.2 Create a Replica using the REC Suspend Option](#)".

2. Select the Volume Pair or Replication Group from the site tree and right-click to invoke the replication context menu.



3. Select [Reverse REC Direction] to invoke the [Confirm Reverse REC Direction] dialog box.

The [Confirm Reverse REC Direction] dialog box can also be invoked from the task pane in the Details view.

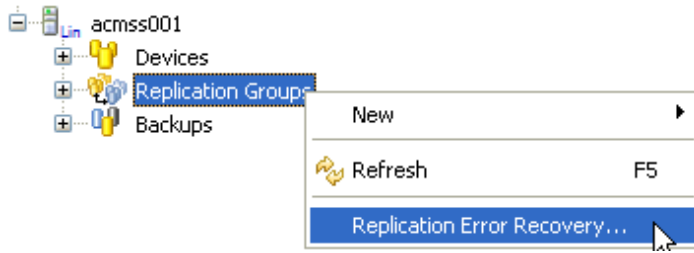


4. Click [Yes] to confirm the details and close the dialog box.
5. Select the reversed Volume Pair or Replication Group from the site view. Right-click to invoke the REC replication context menu.
6. Select [Start/Resume REC] to resume the synchronization.

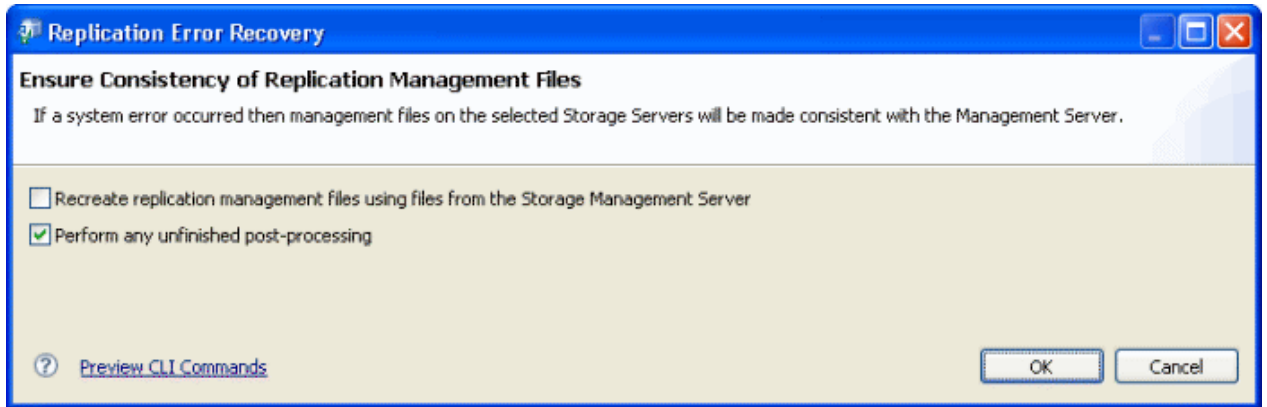
4.5 Replication Error Recovery

Replication Error Recovery allows the user to recover replication management files after errors (i.e. errors typically caused by a system failure whilst replication is being performed).

1. Select the relevant Replication Group from the Site view and right-click to invoke the context menu.



2. On the context menu, click [Replication Error Recovery] to invoke the [Replication Error Recovery] dialog box.



Replication Error Recovery

Label	Description
Recreate replication management files using files from the Storage Management Server	<p>Select this option when the <code>swsrpsetvol</code> (Replication volume information setting command) or the <code>swsrpdelvol</code> (Replication volume information deletion command) that updates the replication management files has ended unexpectedly because of a forced ending or a system failure, or when an error status has been generated for the replication management files (eg, because of an incorrect deletion of the replication management files).</p> <p>When the option is specified, the following replication management files will be recreated:</p> <p>Replication management information stored in the Storage Management Server repository will be downloaded and the replication volume information will be restored.</p> <p>By enquiring on the disk array unit to retrieve the execution information, the execution information of the synchronous processing will be restored.</p>
Perform any unfinished post-processing	Any unfinished post-processing is performed.

3. Set options, and then click [OK] to perform Replication Error Recovery for the selected servers.